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PUBLICATION

The Iron Age

THE NATIONAL METALWORKING WEEKLY

October 23, 1952

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the Electric Furnace saves money!



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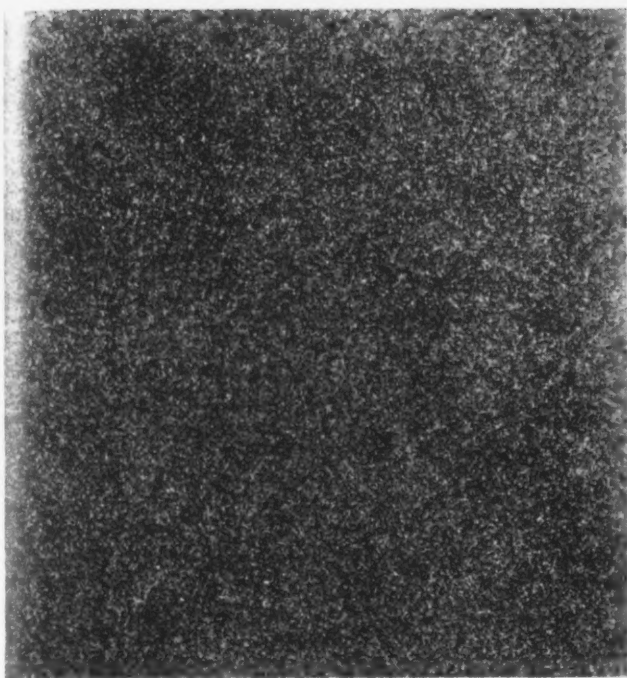
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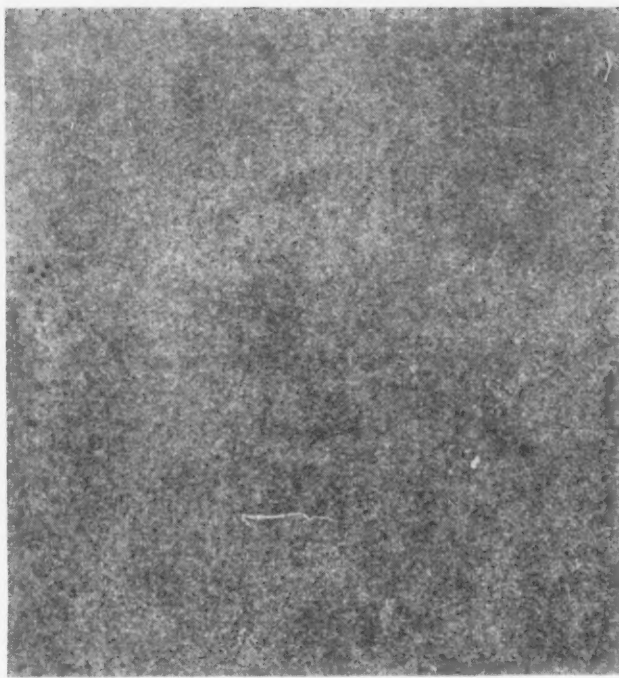
Write for These Other Whiting Bulletins...

- FO-1, "How To Make Your Cupola Operation More Efficient"
- FO-2, "Tips On Improving Cupola Charging"
- FO-3, "Hot-Blast"
- FO-4, "Facts On Duplexing"
- FO-5, "Here's How To Save Melting Fuel"





When plain carbon steel is exposed to the atmosphere, it begins to oxidize almost immediately and a layer of rust forms over the surface. After a brief period this rust has a tendency to curl up and flake off, leaving the metal exposed to further corrosive action.



Corrosion also takes place when Mayari R is exposed to the atmosphere. But the rust is different. Instead of flaking, it forms a thin, tight coating that holds securely to the surface and retards further corrosion of the metal beneath. And this in turn means longer life for Mayari R.

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gradually slowed down. After a few years it appeared to stop altogether. The plain carbon steel and the copper-bearing steel, on the other hand, continued to rust away and lose weight year after year, with practically no decrease in the rate of corrosion.

Mayari R has other advantages. It has better abrasion-resistance, higher yield point, and greater tensile strength than ordinary steel.

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You can get further information about Mayari R low-alloy, high-strength steel by writing to any of our sales offices for Catalog 259.

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Mayari R *makes it lighter...stronger...longer lasting*

October 23, 1952

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The Iron Age—DIGEST

Vol. 170, No. 17
October 23, 1952

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THE IRON AGE, published every Thursday by the CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 29, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. \$8 yearly in United States, its territories and Canada; other Western Hemisphere Countries, \$15; other Foreign Countries, \$25 per year. Single copies, 35¢. Annual Review and Metal Industry Facts Issue, \$2.00. Cables: "Ironage," N. Y.

NEWS DEVELOPMENTS

INDUSTRY APPLICATIONS OF TELEVISION GROW—P. 47

Manufacturing has taken video over from show business and put it to work. Industry is finding uses for the new medium where direct observation is too dangerous, inconvenient, or expensive, or where several operations must be watched at once. Cost runs from \$4200 to \$40,000, depending on picture quality.

WASHINGTON LOOKS AHEAD ON SHORTAGES—P. 49

Government planning agencies have been told to look 5 years ahead in their materials planning, and assume requirements will then be on a full-scale mobilization level. A new materials grouping known as "Band 1" has been created. This consists of critically short materials needing action.

ATOM BYPRODUCTS NEW TOOLS FOR INDUSTRY—P. 50

A great expansion in the use of radioisotopes is envisaged as industry broadens the frontiers of research and process control. Examples of industry applications given at a round table discussion last week showed that greater accuracy in research and production was possible more quickly, economically.

ADMINISTRATION SEEKS STANDBY CONTROLS—P. 55

Washington planners see their case for a controlled economy growing weaker and now are campaigning for standby powers. They say it takes a long time to institute a controls program and if this is not on standby basis a quick crisis could catch us flatfooted. Many industrialists say this is a power grab.

BRAND NEW DODGE ROLLS INTO '53 MARKET—P. 60

The new Dodge rolled into the 1953 automotive market with challenges on three fronts. It has completely new styling from front to back, has a new Red Ram V-8 engine with 140 hp on regular fuel, and has lower price tags on eight of the ten models. K-F has also announced price cuts for its 1953 models.

DROUGHT MAY EXTEND ALUMINUM CONTROLS—P. 65

After the new Congress convenes a stretch-out of aluminum controls may be sought by Defense Production Administration. The reason is a scarcity developing because of water power shortages. In the Pacific Northwest aluminum losses amount to about 1 million lb per day. Other areas are also hurt.

of the WEEK in metalworking

ENGINEERING & PRODUCTION

MADEOVER MACHINES GET OUTPUT MOVING—P. 101

Pressed for delivery of new Army CD-80 tank transmissions Buick engineers looked for some idle machinery in Army reserves, sorted over old fixtures. Inventive engineers came up with machines that got shipments moving. Setups weren't always ideal but many production bugs are being ironed out early.

HOPPER, CONVEYER SPEED SAND HANDLING—P. 105

Unloading carloads of foundry sand can be costly in time, effort, space and cost when done without proper handling equipment and storage facilities. With proper equipment, one man can unload a 50-ton car of sand in less than 1 hr. Storage capacity holds 6 weeks' supply. Sand, received dry, stays dry.

AIR CHUCK CUTS DOWN MACHINING TIME—P. 107

Use of an air chuck setup boosted production 300 pct in machining one small end of a flanged plunger. Flatness below 0.001 in. and an overall length tolerance of ± 0.001 in. was required. Conventional draw bar collet couldn't be used because of flange projection, finished length variations.

LARGE CRYSTALS AID IN STUDY OF METALS—P. 108

A better understanding of plastic behavior of metals is being sought at Johns Hopkins University through study of large, single metal crystals. Large crystals of molybdenum, tantalum, columbium and tungsten have been grown. Pure molybdenum crystals can be extended 75 pct, rolled 98 pct.

WATER SOLUBLE OILS AND CARBIDE MILLING—P. 112

Tests on application of a water soluble oil emulsion to carbide milling of steel by conventional methods indicate they hold no value in prolonging tool life. Four medium carbon steels of varying hardness were tested. Complete flooding of tool and workpiece generally resulted in worst performance.

NEXT WEEK—HARD ALUMINUM FINISHES RESIST WEAR

Harder, thicker and denser anodic surface coatings, having considerably better resistance to wear and abrasion, are now available on aluminum. These hard oxide coatings on lightweight aluminum may replace heavier metals for some gears, slides, pinions and other aircraft applications.

MARKETS & PRICES

GEAR STEEL EXPANSION TO MARKET OUTLOOK—P. 43

Steelmakers' lack of interest in adding new capacity for some items reflects fear of lowered normal demand and realistic calculation of the all-civilian market. Facilities already in place can produce more than anticipated civilian demand. Special incentives from Washington may encourage some expansion.

INDUSTRY HAS TROUBLE WITH INVENTORY LAW—P. 46

National Production Authority is checking compliance with its 30-day inventory regulation on steel stocks. Obeying the law has become a major headache to many firms, who regard the regulation as an unenforceable nuisance. NPA's limited staff can't do much truly intensive checking of stockpiles.

WASHINGTON POLICY LOSES TOOL EXPORTS—P. 71

The government's policy is losing overseas markets for U. S. machine tool builders. Foreign competition is getting tougher every day, and European manufacturers are growing fat from Marshall Plan aid. High American labor costs plus Washington's share-the-market policy may lose markets permanently.

CANADIAN GOLD MINING LOSES ITS GLITTER—P. 73

Gold mining in Canada has become a losing proposition. Soaring labor and production costs, higher taxes and a "poor" gold price are killing the industry. In the past few weeks several producers signalled they are on the way out of business. Gold production in the last half of 1952 is seen as dropping.

SIGNS SHOW BIGGEST QUARTER IN HISTORY—P. 141

From all indications the fourth quarter of this year will be the biggest ever for both steel production and consumption. Climbing capacity makes the steel industry almost a sure bet to beat all previous records. But steel's customers are in high gear too. Total industrial output is moving to new high.

BRASS MILLS ARGUE CASE FOR PASS-THROUGH—P. 144

Brass mill representatives are asking 100 pct pass-through of higher costs on foreign copper, labor, freight. Now absorb 2.345¢ per lb because of insufficient domestic supplies, higher operating costs. Stabilization officials oppose this type action, will "consider" industry proposals.

Save critical alloys

WITH AJAX-NORTHROP

INDUCTION MELTING

High speed melting enables Ajax-Northrup high-frequency furnaces to recover all of the nickel in the charge, 99% of the chromium, 95% of the molybdenum . . . consistently high percentages of every alloying element.

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For instance, a 2% chromium saving in one Ajax-Northrup equipped foundry saves ten tons of ferrochrome a month, or \$60,000 a year. (Melting capacity 1,000,000 lbs. a month—63% ferrochrome @ 25¢/lb.)

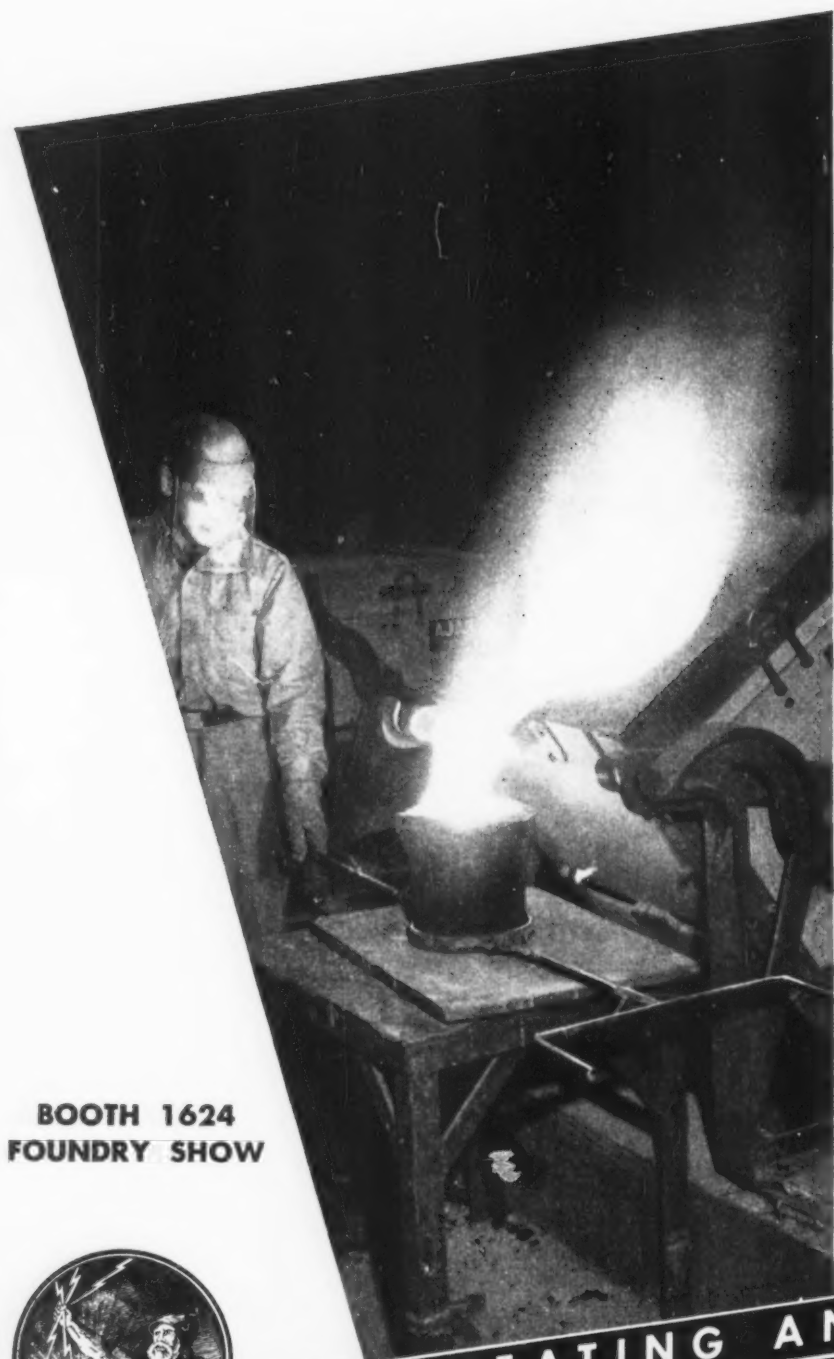
\$60,000 a year pays for the furnaces in short order—and the chromium saved is enough for an extra 70,000 pounds of 18 and 8 stainless steel a month.

The figures are slightly different for other critical alloying elements. But the arithmetic's the same—the total savings frequently just as impressive.

Besides saving metals, Ajax-Northrup furnaces melt at extremely high speed, with composition controlled within 0.25%, pouring temperatures within 20°F.

There's an Ajax-Northrup furnace to fit every melting job, including yours. Write us today for details.

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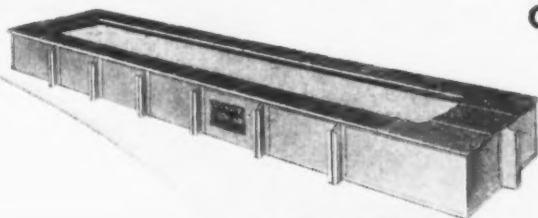
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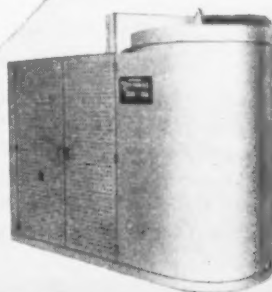
As a division of Sunbeam Corporation we have the opportunity of working with our furnaces in the production of Sunbeam appliances, lawn sprinklers, sheep shears, animal clippers, etc. In manufacturing our own products, we must contend with practically every heat treating problem faced by industry—a position unique in the furnace manufacturing field.

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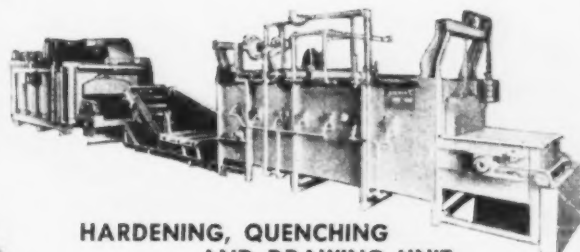
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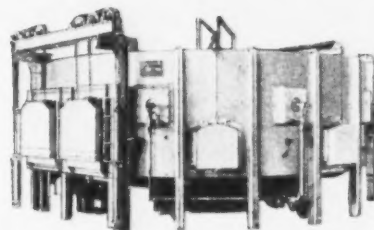
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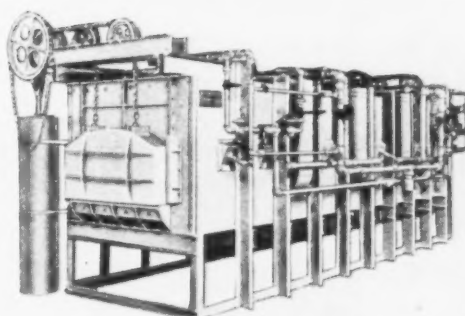
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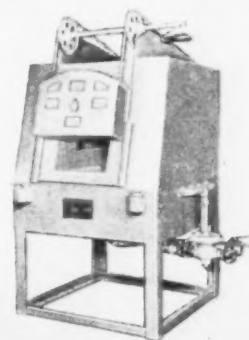
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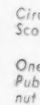
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Those manufacturing gutters, downspouts, flashing, etc., will want a copy of the new information-packed booklet *Sharon '430' for Better Roof Drainage Systems*. Available from district sales offices or by writing direct.



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October 23, 1952

Editorial

The Iron Age

FOUNDED 1853

What About The Goose?

SOMEbody had better look to the diet of the goose that [once] laid the golden egg. She appears to be fat and well fed but there is something wrong with her basal metabolism.

A private survey shows that she hasn't laid a golden egg for many a year. There was a time when she worked hard, had good habits and had something to show for it. Then she laid 24-carat gold eggs.

The current egg is somewhat misleading. It appears to be coated with a weak solution of gilding. Many are being fooled by the color and the shape. A few are not. The great majority are taking the goose and her eggs for the real thing.

The boys in the back room who feed and control the goose know very well what they are doing. Their bulletins on her health, size and number of eggs laid read somewhat like the "big lie" technique.

The defense program hides some of the cracks in the gilded egg. They can't be seen with the naked eye. When defense spending passes or reaches a lower level it won't take a dime store pair of glasses to see that the gilding is yellow eyewash and not gold.

There could be a change in the diet and care of the goose. That might be too much to ask. It is hard to believe that artists of semantics will do anything more than coin new words and try to destroy such old fashioned words as thrift, hard work, reducing debt, cutting down waste and checking for the facts.

American industry (the goose) has the framework to meet the challenge of the future when initiative, salesmanship and imagination replace "handout" business. Some of the toughest years in the history of competition for better products, markets and services are due soon.

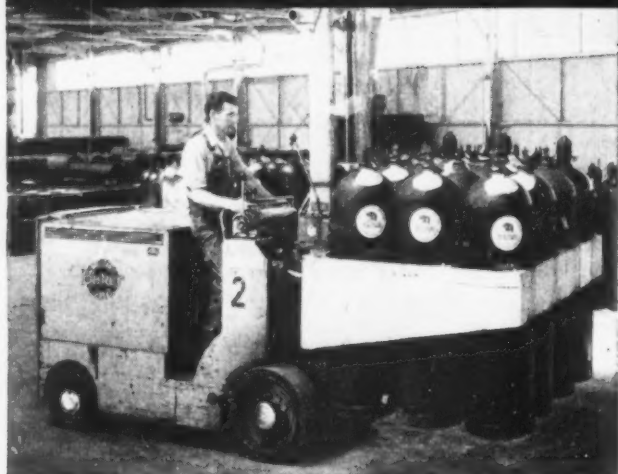
As long as wage spirals are a yearly occurrence and as long as taxes take as much if not more than net profits the gilding on the egg will become thinner—and the goose may stop laying.

The goose needs a new diet of substantial food, such as: Less government interference; better relations between labor and management on mutual problems; elimination of the excess profits tax that puts a premium on inefficiency and slovenliness and a restoration of the profit motive without blushing. Maybe then we can talk confidently and honestly about our glorious future.

Tom Campbell

Editor

DOW CHEMICAL saves thousands of dollars annually with *BAKER TRUCKS*



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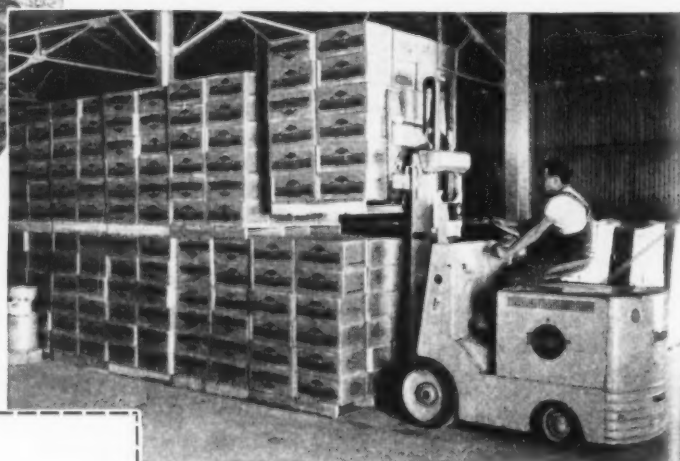
At the Pittsburg, California, plant of The Dow Chemical Company, five Baker Fork Trucks expedite handling of material in production, storage and shipping departments.

Two of these trucks, one of them fitted with a Trayner-Reinhart cylinder carrier, transport 16" cylinders of ammonia—twelve at a time—from production to warehouse and from warehouse to shipment. Trucks load cylinders directly into boxcars, or onto highway trucks.

The remaining trucks speed handling of chemical products in bags or cartons on pallets—taking them from production to storage, where they are high-tiered to conserve floor space, and from storage to shipment, where further man-hour savings are made in loading.

Prior to the installation of the Baker Trucks, material was transported manually and hand-stacked. Cylinders were rolled by hand, one at a time. The use of the trucks has resulted in savings of thousands of dollars annually over former methods.

Bagged material, stacked on pallets as it comes from the line, is tiered to the ceiling in storage. Cartons of finished chemical products are handled in pallet loads to save manual handling in transporting, storing, and car or truck loading.



Baker

INDUSTRIAL TRUCKS

Dear Editor:

Letters from readers

Shades of 1910

Sir:

I recently found an old copy of THE IRON AGE dated Oct. 13, 1910. Needless to say, it is most interesting reading and since I have spent most of my life in the Pittsburgh area in the iron foundry and steel plant, the contents of the issue have been read many times.

In this connection I would like to know where I can get some information on the Buffalo Foundry & Machine Co. of Buffalo, who advertise on p. 50 that they can make gray iron, semisteel, air furnace, any size, up to 200 tons in weight, castings.

I was wondering if I could get any accurate information as to the size of this plant and what became of it as it must have been quite some operation in its day. A 200-ton casting to me, anyhow, is still pretty big (190 tons bigger than I ever made).

E. P. NAGY

Lafayette, Calif.

The Buffalo Foundry & Machine Co. is now the Bufllovak Equipment Div. of Blaw-Knox Co. at 1543 Fillmore Ave., Buffalo.—Ed.

Lively "Corpse"

Sir:

It is noted on p. 85 of your Sept. 11 issue that the Long Beach Naval Shipyard is described as having three graving docks ("inactive — soft ground"). Inasmuch as we respect the extent of your magazine's circulation within the metal trades, this opportunity is taken to point out that this statement is erroneous.

The Long Beach Naval Shipyard was reactivated on Feb. 1, 1951, after having been in an inactive status for approximately 7 months. At the time of such reactivation all three graving docks were returned to operative status and have remained so since that time.

CAPT. C. M. TOOKE, USN
Production Officer

Long Beach Naval Shipyard
Long Beach, Calif.

Sorry, we certainly were not trying to put you out of commission.—Ed.

Metals for Tomorrow

Sir:

Thank you very much for "Metals for Tomorrow" a preprint from the Oct. 9 issue. Allow me to congratulate you on the comprehensive coverage of the subject by your technical editor, D. I. Brown. It is a splendid piece of work.

I would like very much to have ten extra copies and also ten reprints of Part II when they are available.

C. K. DAVIS
President & General Manager
Remington Arms Co., Inc.
Bridgeport, Conn.

Sir:

Your advance preprint "Metals for Tomorrow" has just been received, and in glancing through it I can see that it is a masterly presentation of a great deal of valuable information.

I should like to receive six additional copies for distribution among our staff for use as a reference manual. I feel certain that Part II will be as valuable to us as Part I, so will you put me down for six copies of that also.

C. T. BAROCH

Metallurgical Div.
U. S. Dept. of the Interior
Bureau of Mines
Boulder City, Nev.

Shell Molding Machine

Sir:

In the Aug. 21 issue, p. 63, there is an article by K. W. Bennett about the Powdered Metal Products Corp. in Chicago making, for rent or sale, a shell molding machine.

This interested me very much so I wrote to the Chicago Powdered Metal Products Corp. at 800 Clark St. They replied that they had no such machine and were not contemplating entering that field.

I would appreciate the address of the company that makes this machine.

H. GAINES
Factory Manager
Marathon Electric Mfg. Corp.
Wausau, Wis.

The correct address for the firm noted in our article of Aug. 21 is Powdered Metal Products Corp. of America, 9335 Belmont Ave., Franklin Park, Ill.—Ed.

Building Material

Sir:

I would appreciate the address of the Kanium Corp. mentioned in the article on p. 114 of your Oct. 2 issue.

This article refers to tiny glass balloons that can be used in the building trade which was developed by researchers at the Armour Research Foundation of Illinois Institute of Technology.

L. B. SCHMIDT
Representative
Australian Consolidated Industries, Ltd.
Pittsburgh

The address of Kanium Corp. is 332 S. Michigan Ave., Chicago, Ill.—Ed.

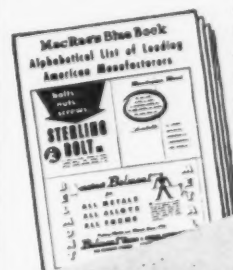
PRIME MOVER of INVENTORIES



INDUSTRY'S "WORKHORSE" Invites advertisers into its 60th edition

Next year, the 60th consecutive annual edition of MacRae's Blue Book will again produce top-quality inquiries for the thousands of advertisers who will describe their products in this most-favored, most accessible of industrial directories. Shouldn't you have the details of its pulling power?

This handy address directory, at left, sent free to all recipients of the current edition of MacRae's Blue Book, has been received with enthusiasm.

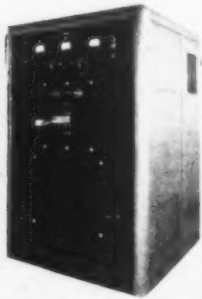


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MacRAE'S BLUE BOOK

America's Greatest Buying Guide
18 East Huron St., Chicago 11, Ill.

DEPT. OF DEFENSE work by *LINDBERG* Induction Heating Units



L. A. Young Spring & Wire Corp., Detroit, Mich., use two 5 KW Lindberg Induction Heating Units for production brazing,

soldering, hardening, annealing, stress relieving, hot forming, forging or shrink fitting requirements.

We can't tell you much about the manufacturing processes at the L. A. Young plant (due to security restrictions) . . . but we can tell you about the many rugged construction features of this equipment . . . features which make it so dependable that the L. A. Young organization selected Lindberg Induction Heating Units for their important Department of Defense work. These points of design and construction will minimize costly breakdowns and aggravating work stoppages:

Filament voltage regulation transformers keep tube filament voltages at proper values regardless of line fluctuations. The end result . . . longer tube life.

Checklites . . . A system of indicating lamps instantly reveals any abnormal operating conditions . . . simplifies servicing.

Work coil burn-out protection . . . An electrical interlock system makes it impossible to turn on power when cooling water is not flowing.

Long-life industrial tubes feature shortened internal structure . . . Kovar metal-to-glass Seals . . . heavy walled anodes.

Sealed tank capacitors are hermetically sealed against dirt and dust . . . require no servicing or refilling.

Investigate Lindberg Induction Heating Units. Ask for Bulletin 1440.

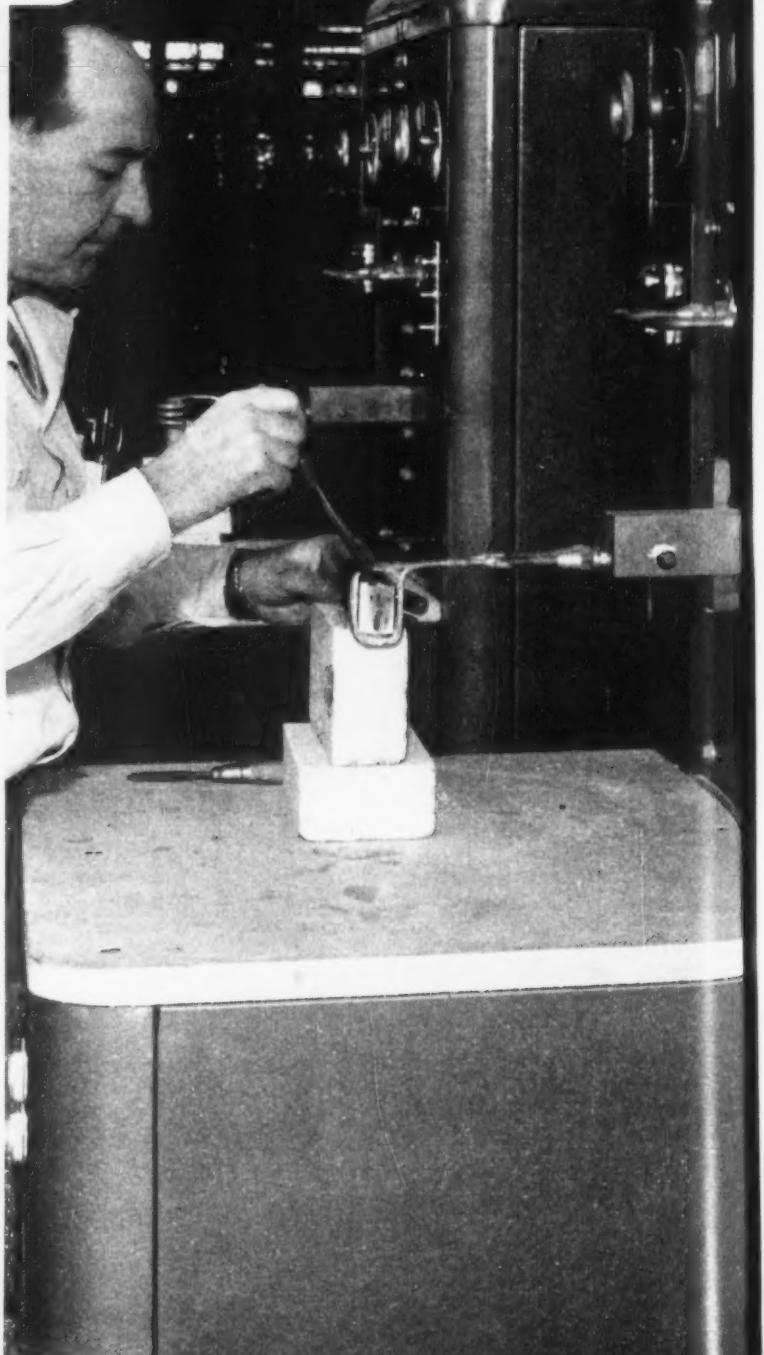
LINDBERG



HIGH FREQUENCY DIVISION

LINDBERG ENGINEERING COMPANY,

2450 West Hubbard Street, Chicago 12, Illinois



Fatigue Cracks

by Charles T. Post

Contact

Dick Raddant, your f.f.j.'s automotive expert, passes along the experience of a friend who was flying from Detroit to Chicago in a two-engine commercial air liner. The flight had been under way for several minutes when he looked out and noticed that the starboard engine was completely silent and the prop feathered. His stomach turned over momentarily, but he was an experienced flyer and knew the capabilities of the ship. He realized that it had plenty of altitude and was in no serious danger.

A minute later the stewardess came out of the pilot's cabin with "a very important announcement."

"Because the pilot is not completely satisfied with the performance of one of the engines," she crisply declared, "we are returning to Willow Run airport."

The airlines are satisfied with nothing less than perfection.

We Eat

The trans-Atlantic airline competition is a breed of its own. The American airlines rely on service. The French serve champagne with every meal. And then there are the Dutch.

In a transparent bid to add a little glamor to the business, K.L.M. Royal Dutch Airlines dropped off a press release a couple of weeks ago, which, so far as we know, has never seen print anywhere.

The story concerned an American who purchased a 3-lb steak in Amsterdam prior to his departure aboard a K.L.M. (naturally) plane for England.

"Upon arrival at London airport," the release says, "he was informed by customs officials that one was only allowed to import roast meat to England. He then requested the captain of the aircraft, from which he disembarked, to return the steak to Schiphol Airport where it could be prepared, and returned to him.

"The parcel of raw meat travelled back to Holland in the aircraft's cockpit. A ground hostess at Schiphol Airport in Amsterdam met the plane, received the package, and immediately took it to K.L.M.'s commissary. Half an hour later, she had the broiled

steak placed aboard the next London-bound aircraft. (The American) was waiting for it at the airport, and the customs official, who had earlier expressed his veto, gave his approval for the entry of (the steak) dinner."

If the Dutch think they are going to attract any passengers because of that story, they're wrong. No real American will have anything to do with people who broil a steak for a full half-hour.

So?

We newsmagazine people are sort of seventeenth cousins in that we reach the readers once a week.

Last week, though, a business weekly pulled a flub that we can't entirely excuse on the grounds of innocence. Under the banner heading, "Continuous Casting Comes to Steel" was the sensational opening paragraph, "Steel makers can write a new and radical process into their handbooks." Then, after a couple of paragraphs of wide-eyed warmup, "Now, continuous casting has arrived in the steel industry. At the recent annual meeting of the Association of Iron & Steel Engineers in Cleveland, engineers and executives had their first glimpse of a steel man's version of a continuous casting plant . . ."

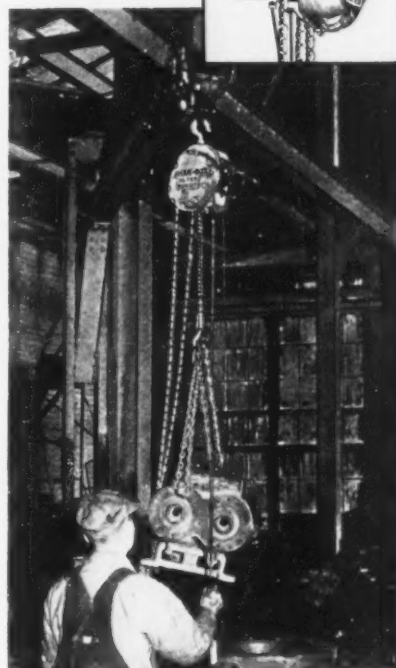
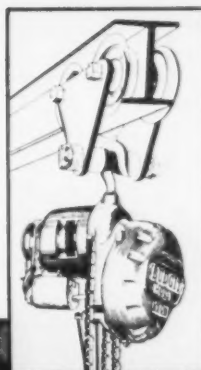
From there on, the article was what the theatrical critics would call "an adequate performance." But we couldn't quite forget the stir caused by your f.f.j.'s first complete technical article on continuous casting of steel. (See THE IRON AGE, February 24, 1944.) Or the prize-winning one in 1948. On second thought, though, your f.f.j.'s editors might not do so well, either, if they had to cover soap, textiles, stocks and bonds, and retail trade on top of the fast-moving metalworking industry.

Puzzlers

Answer to last week's puzzler: 1089; 10989; 109989.

Here's one suggested by Charles S. Kinnison: In a game of "heads or tails," a gambler bets half of the money in his possession on each toss of the coin. If he wins on exactly half of a series of tosses, does he gain or lose?

SO FAST...
SO EASY...
SO
ECONOMICAL



The smallest 'Budgit' Electric Hoist lifts a quarter-ton load one foot in less than two seconds. A slight pull on the control cord starts its fast action. And the 'Budgit' lifts all day long for a few pennies' worth of current.

You need 'Budgit' speed, efficiency for defense and civilian production. It increases manpower. Makes lifting an easy, one-hand operation. No time out due to injuries, no strained muscles.

Hang up, plug in, use! That's all it takes to have 'Budgit' service. Capacities: 250 to 4,000 lbs., A.C. and D.C. models. Prices start at \$119.00. Write for Bulletin No. 391.

'BUDGIT' CORD REELS —
increase the operating range of any hoist, portable tool, or mobile device having motors up to and including 1 H.P.



'Budgit'
ELECTRIC HOISTS

MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of "Shaw-Box" Cranes, 'Budgit' and Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, and 'American' Industrial Instruments.

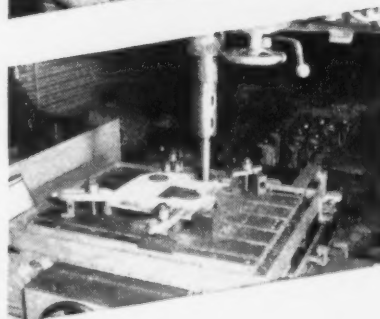
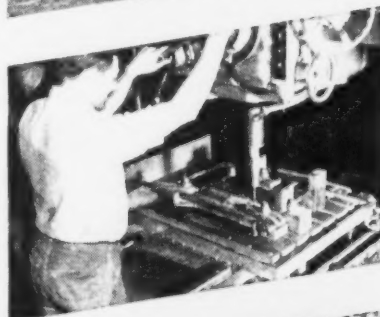
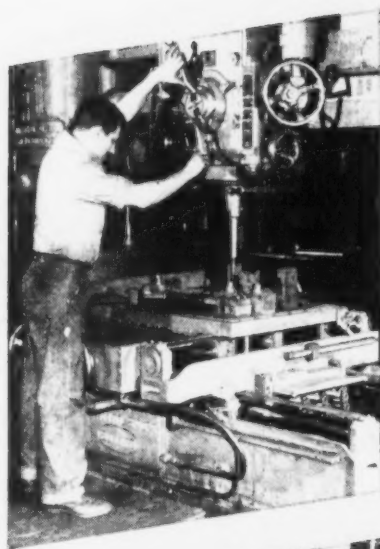
BULLARD SPACER

Norton Company, Grinding Machine Division

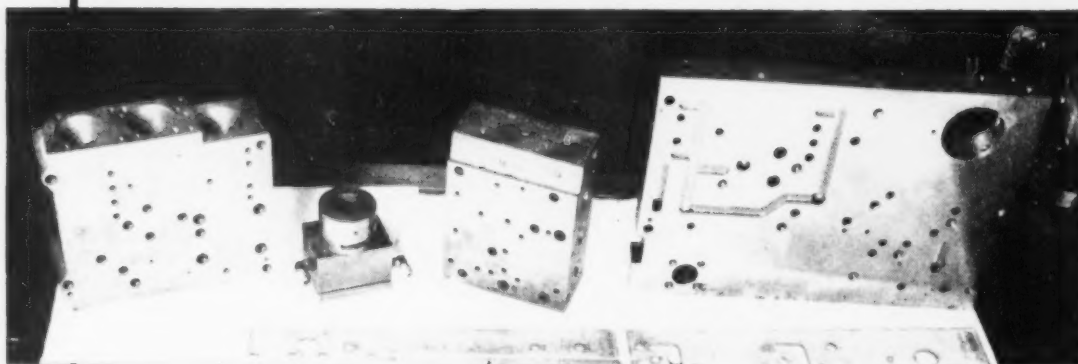
is obtaining important advantages from use of 4 BULLARD SPACERS on intricate drilling, reaming and tapping jobs.

Among the benefits received is a marked reduction in Operator fatigue. This is especially pronounced in overtime operation.

NORTON COMPANY has also found that with incentive time allowances, jig work Operators' efficiency is regularly held at 90% to 125%, while that of their Operators on BULLARD SPACERS runs 115% to 150%.



Ask for your copy of "The Norton Story"



THE BULLARD COMPANY
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Conventions & Meetings

Oct. 27-29—American Gear Manufacturers Assn., semi-annual meeting, Edgewater Beach Hotel, Chicago. Association headquarters are in the Empire Bldg., Pittsburgh.

Oct. 27-30—American Gas Assn., annual convention, Atlantic City, Hotel Traymore, N. J. Assn. headquarters are at 420 Lexington Ave., New York.

Oct. 27-31—Electrochemical Society, semi-annual national meeting, Mt. Royal Hotel, Montreal, Canada. Society headquarters are at 235 W. 102nd St., New York.

Oct. 27-31—Gas Appliance Manufacturers Assn., exhibition, Atlantic City, N. J. Association headquarters are at 60 E. 42nd St., New York.

Oct. 30-31—Society of Automotive Engineers, Inc., National Diesel Engine Meeting, Chase Hotel, St. Louis. Society headquarters are at 29 W. 39th St., New York.

Oct. 30-31—National Assn. of Aluminum Distributors, annual convention, Del Monte Lodge, Pebble Beach, Calif.

Oct. 30-31—Society for Advancement of Management, annual fall conference, Hotel Statler, New York. Headquarters are at 411 Fifth Ave., New York.

Nov. 5-9—Scientific Apparatus Makers Assn., mid-year meeting, The Homestead, Hot Springs, Va. Association headquarters are at 20 N. Wacker Drive, Chicago.

Nov. 6-7—Society of Automotive Engineers, Inc., National Fuels & Lubricants Meeting, The Mayo, Tulsa, Oklahoma. Society headquarters are at 29 W. 39th St., New York.

Nov. 6-10—Magnesium Assn., annual meeting, Hotel Biltmore, New York. Association headquarters are at 122 E. 42nd St., New York.

Nov. 10-13—National Electrical Manufacturers Assn., semi-annual meeting, Haddon Hall Hotel, Atlantic City, N. J. Association headquarters are at 155 E. 44th St., New York.

Nov. 10-14—Wire Assn., annual convention, Cleveland. Association headquarters are at 300 Main St., Stamford, Conn.

Nov. 13-14—National Constructors Assn., Labor Committee and Executive Committee, Hotel Roosevelt, New Orleans. Association headquarters are at 50 E. 41st St., New York.

Nov. 19—American Mining Congress, Coal Division Conference, Pittsburgh. Society headquarters are at 1200 18th St., Washington.

Nov. 19-21—American Management Assn., Finance Conference, Hotel Roosevelt, New York. Association headquarters are at 330 W. 42nd St., New York.

Nov. 20-21—American Society for Quality Control, mid-West Conference, Claypool Hotel, Indianapolis.

Nov. 21—Malleable Founders Society, Western Section meeting, The Drake, Chicago. Society headquarters are at Union Commerce Bldg., Cleveland.

Pyrene

REG. U.S. PAT. OFF.

**CAREFULNESS ISN'T ENOUGH
YOU NEED PYRENE, TOO!**



There's a Pyrene for every fire hazard

The watchword of fire prevention is *Be Careful*. But fire may come—any time. When it does, Pyrene* can make the difference between a harmless scare and a gutted business. Whatever your fire hazard, there's a Pyrene to cope with it—for Pyrene makes everything from hand extinguishers to complete automatic fire-fighting systems.

*T.M. Reg. U.S. Pat. Off.

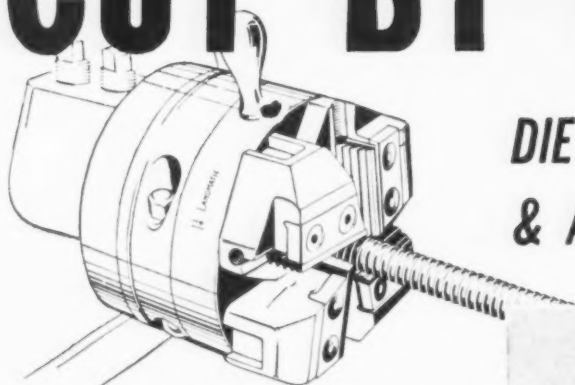
 <p>Vaporizing Liquid Always dependable, multi-use extinguisher.</p>	 <p>Cartridge-Operated For ordinary fires. No annual recharging.</p>	 <p>Chemical Foam For flammable liquids, ordinary combustibles.</p>	 <p>Systems Large and small, manual and automatic.</p>
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Soda-Acid, Pump Tank and other approved extinguishers

PYRENE MANUFACTURING COMPANY
692 Belmont Avenue Newark 8, New Jersey
 Affiliated with C-O-Two Fire Equipment Co.

THREADING COSTS CUT BY OVER 75%

**DIE HEAD CUTS COST OF PRODUCTION
& ASSEMBLY OF STABILIZER SCREWS**



Time Study and Methods Department records of a large aviation equipment company furnish data of still another job where LANDMATIC Heads have effected large savings in machine time and assembly and improvements in product quality.

In this operation, the 1 1/4" LANDMATIC Head on a turret lathe equipped with Lead-screw is cutting a 5/8-6 Acme thread on a Stabilizer Screw used by a light aircraft manufacturer. The thread was held to the close tolerance of $\pm .001$ between the P.D. of the thread and the O.D. of the screw, for a full thread length of 5 3/8" on cold-drawn piston stock, Spec. #AISI, B1112.

Former methods required two passes to produce the finished thread—one roughing and one finishing cut. The thread is now cut in one pass in .192 at a spindle speed of 230 R.P.M. Approximately 3500 pieces are cut between chaser grinds. Hand fitting with the mating nut in assembly, previously necessary, has been eliminated. Total cost savings in all operations are in excess of 75%.

LANDMATIC Heads are stationary threading heads with self-opening action designed primarily for turret lathes. Their unusually-large oversize capacity makes them ideally suited for these machines. For detailed information and specifications, write for Bulletins F-80 and F-90.

LANDIS
Machine
COMPANY
WAYNESBORO, PENNA



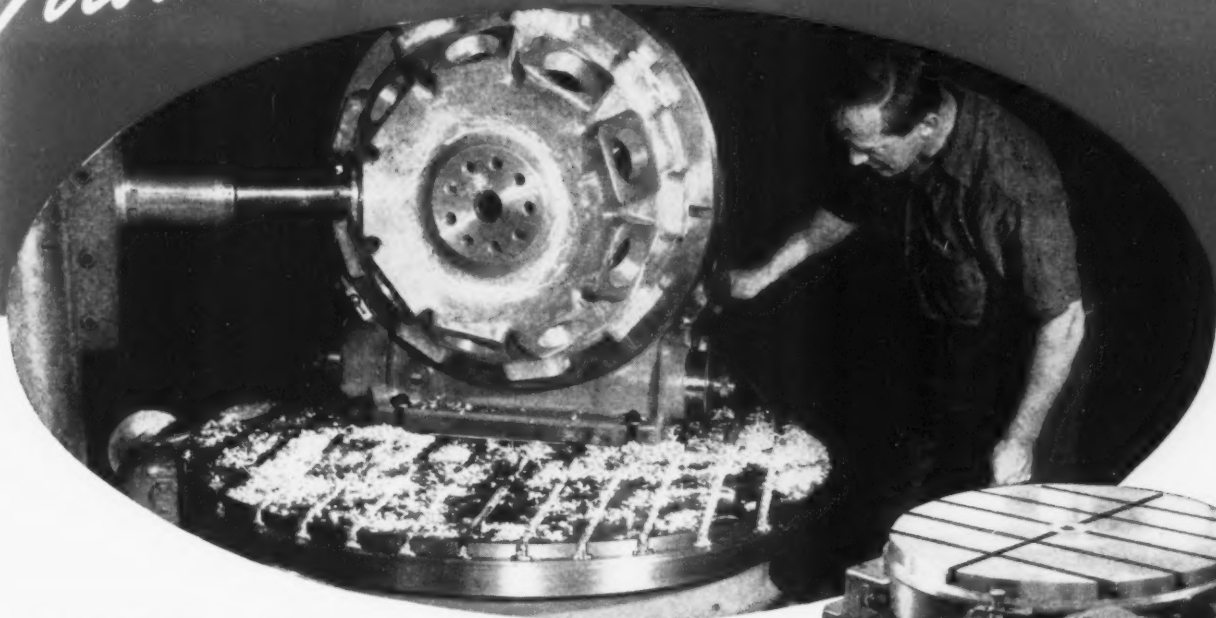
THREADING MACHINERY—THREAD CUTTING DIE HEADS—COLLAPSIBLE TAPS

PRATT & WHITNEY

Rotary Tables

First Choice

FOR PRECISE CIRCULAR SPACING
AND ANGULAR POSITIONING—
10 inch TO 50 inch DIAMETER



ACCURATE • FAST • ADAPTABLE

3 Basic Types

**PLAIN
TILTING
VERTICAL**

Pratt & Whitney Rotary Tables produce highly accurate work . . . faster, more efficiently and with definite assurance of "job precision." Indexing at simple or compound angles is obtained rapidly and easily for drilling, tapping, boring, reaming and face milling operations and for stage and final inspection checks. Every P&W Rotary Table is machined, assembled and inspected to rigid standards of accuracy.

Plain Rotary Tables . . . 12" and 20" diameters

Motor Driven Plain Rotary Tables . . . 24", 30", 42", and 50" diameters

Tilting Rotary Tables . . . 10", 16", and 24" diameters

Motor Driven Vertical Rotary Tables . . . 30" diameter

For complete
information, write on
your Company letter-
head to your nearby
Pratt & Whitney Branch
Office listed below.

PRATT & WHITNEY

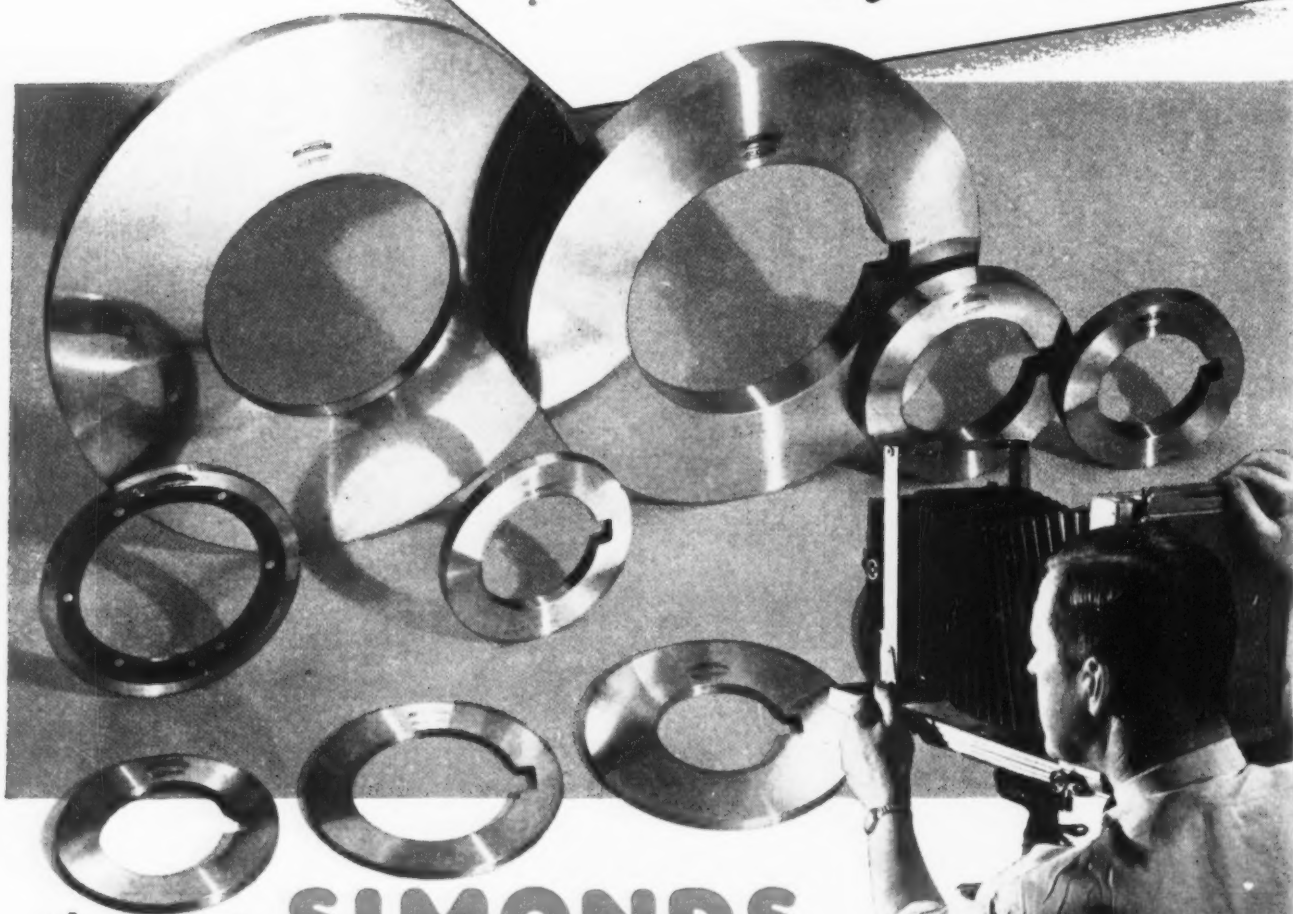
DIVISION NILES-BEMENT-POND COMPANY

WEST HARTFORD 1, CONNECTICUT, U. S. A.

First Choice  *for Accuracy*

Branch Offices . . . BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DALLAS (The Stanco Co.) • DETROIT • HOUSTON (The Stanco Co.)
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*If you want to get
the **True Picture** of
what **Rotary Slitting**
Can Be . . .*



then get **SIMONDS**
"Red Streak" Forged Rotary Shears

For shearing cold sheet or strip . . . separately or in gang-slitting operations . . . these "Red Streak" Rotary Shear Knives do the job *as nothing else can do it.*

Forged from Simonds special Shear Steel . . . poured in Simonds' own steel mill . . . you can get "Red Streak" Shears in these 3 different alloys, each formulated for a specific application:

High-chrome steel, for shearing hot and cold rolled, tin plate and non-ferrous . . . *High-speed steel*, for hot and cold rolled . . . and *Special-alloy steel*, for hot and cold rolled and non-ferrous. Whatever your shearing job, Simonds has the knife that will stand up longer, cut cleaner, and at lower cost. Get in touch with your Industrial Supply Distributor *now*.

SIMONDS
SAW AND STEEL CO.

FITCHBURG, MASS.

Factory Branches in Boston, Chicago, San Francisco and Portland, Oregon. Canadian Factory in Montreal, Que.
Southern Service Shop in Meridian, Miss. (formerly J. H. Miner Saw Mfg. Co.).
Simonds Divisions: Simonds Steel Mill, Lockport, N. Y.; Simonds Abrasive Co., Phila., Pa. and Arvida, Que., Canada

THERE IS PLENTY OF TIN IN MALAYA



Only a deliberate distortion of facts could give rise to the false impression that tin is in short supply.

You should know the truth.

We have prepared a 20-page booklet that graphically and concisely presents the complete story. A copy is yours for the asking.

THE MALAYAN TIN BUREAU

1028 Connecticut Avenue

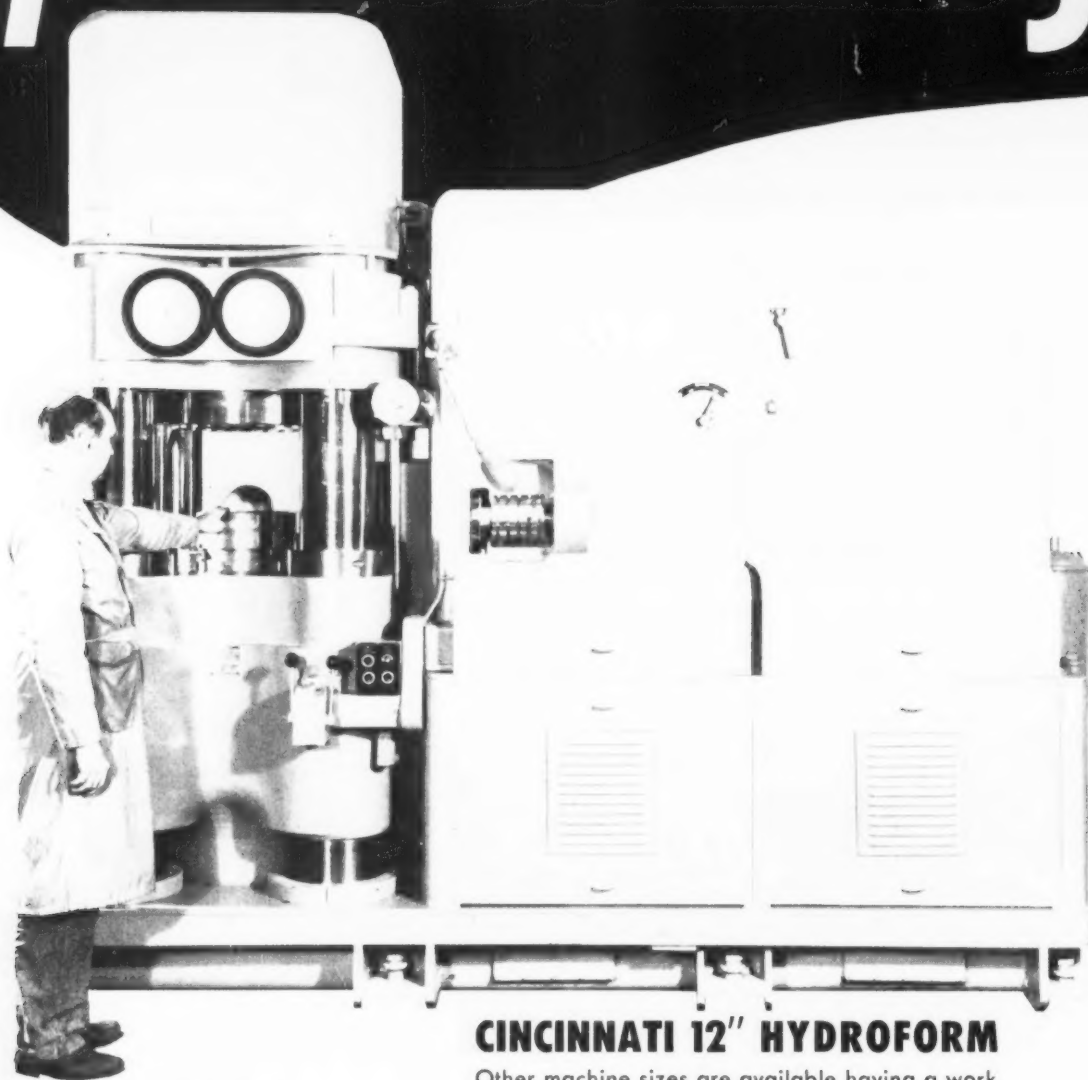
Department 30

Washington 6, D. C.

There Is Plenty of Tin in Malaya



Hydroforming



EASY-TO-PRODUCE MALE PUNCHES MATERIALLY REDUCE TOOL COSTS

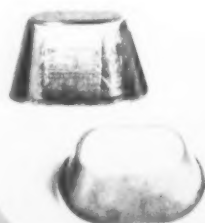
Shown below are typical examples of the simplicity of Hydroform tooling.

CINCINNATI 12" HYDROFORM

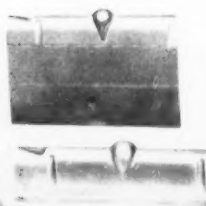
Other machine sizes are available having a work capacity (max. blank dia.) of 19", 23", 26" and 32". Information on machines of larger capacity furnished on request.



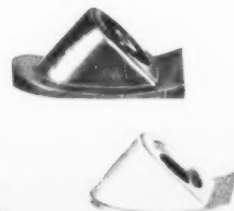
Punch of 1020 Steel
Part of .037" Mild Steel



Punch of 1020 Steel
Part of .045" Stainless



Punch of 1020 Steel
Part of .032" Aluminum



Punch of Kirksite
Part of .037" Aluminum

cuts the cost of tooling for deep draw work

TOOL COSTS CAN RUN AS LOW AS 10% OF CONVENTIONAL DIE SET COSTS!

Hydroforming is deep drawing by use of a male punch working upward into a *flexible die member* . . . a built-in feature of the Cincinnati Hydroform that replaces *more than half* the parts of the conventional draw die.

Hydroform tooling consists simply of a punch of the desired shape, and a draw ring contoured to fit around the punch. Normal clearance between the punch and draw ring is 50% or more of the thickness of the material being formed—eliminating a costly die-maker's fit.

Punches can be made of untreated steel, cast iron, hard woods, Kirksite, brass, aluminum, or other easily worked materials, depending on the quantity and shape of the part. Punch maintenance is minimized as the cushioned action of the flexible die member reduces punch wear.

The tools are self-centering and easy to locate in the machine. Set-up and changeover of tooling is accomplished rapidly.

Low cost tooling is a major Hydroforming advantage. However, Hydroforming brings to deep drawing *many* other benefits:

- Most parts can be produced in a single draw—eliminating multiple operation processing.

- Practically any shape can be formed from a wide variety of materials up to steel $\frac{3}{8}$ " thick.

- Part quality is materially improved. Surface finish is unimpaired.

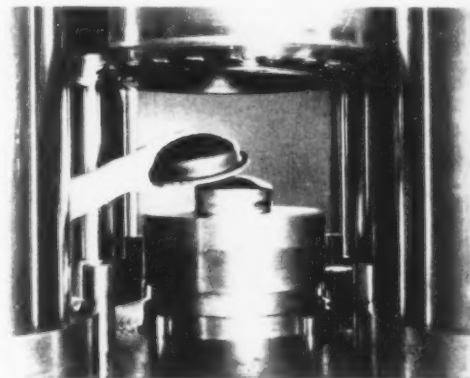
Investigate Hydroforming now. It will change your thinking on deep drawing and forming! Call in your nearest Cincinnati Milling Machine Co. field engineer for a factual discussion of how Hydroforming can cut the cost of your metal forming work. For detailed information on Hydroform machines and the Hydroforming principle, write for Bulletin M-1759.



PART DRAW RING PUNCH

Shown above are the basic elements of Hydroform tooling—a draw ring and punch.

A close-up view of tooling installed in the Hydroform is shown below. Only 7½ hours were required to produce the draw ring and punch from mild steel. The part shown is a high pressure vessel cap of $\frac{1}{4}$ " mild steel, Hydroformed in one operation.



THE CINCINNATI MILLING MACHINE CO.

CINCINNATI 2, OHIO



Why Burn Down Your House for Roast Pig?

IN ancient China, men ate meat raw. But one day, while Ho-ti the swineherd gathered mast for his hogs, his stupid son Bo-bo, playing with fire, burned down their straw hut. Bo-bo sniffed the odor of burnt pig. He touched one to see if it was still alive, scorched his fingers, put them in his mouth and was amazed at the delicious taste. Father came home and caught his son devouring a pig. Ho-ti tried one, too, found it intoxicatingly sweet and satisfying.

Thereafter, neighbors observed feverish building of new straw huts at Ho-ti's, followed always by conflagrations. The secret leaked and fires became widespread. In a few weeks even his Lordship's town house was on fire. Finally, straw for hut building disappeared from the market and young pigs could not be had for love or money. At last, after many generations, a wise man arose

who said that a pig could be roasted without burning down an entire house.

Thousands of years later, we Americans feast deliriously on "roast pig." Accompanying our delights are fires of inflation, which can destroy our values just as certainly as the roasting of Ho-ti's pigs consumed his earthly possessions. But surely we need not await the coming of a sage to tell us not to burn down our houses to enjoy the delights of roast pig!

Let us unite to stop the ruinous flames of inflation. Curb wasteful and unnecessary government spending. Balance our Federal budget. Control our national debt and reduce taxes. Only in this sane way can we produce more straw and enjoy our houses, raise more pigs and eat them, too.



The Youngstown Sheet and Tube Company

General Offices--Youngstown 1, Ohio

Export Offices--500 Fifth Avenue, New York

MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

RAILROAD TRACK SPIKES • CONDUIT • HOT AND COLD FINISHED CARBON AND ALLOY BARS • PIPE AND TUBULAR PRODUCTS • WIRE • ELECTROLYTIC TIN PLATE • COKE TIN PLATE • RODS • SHEETS • PLATES.



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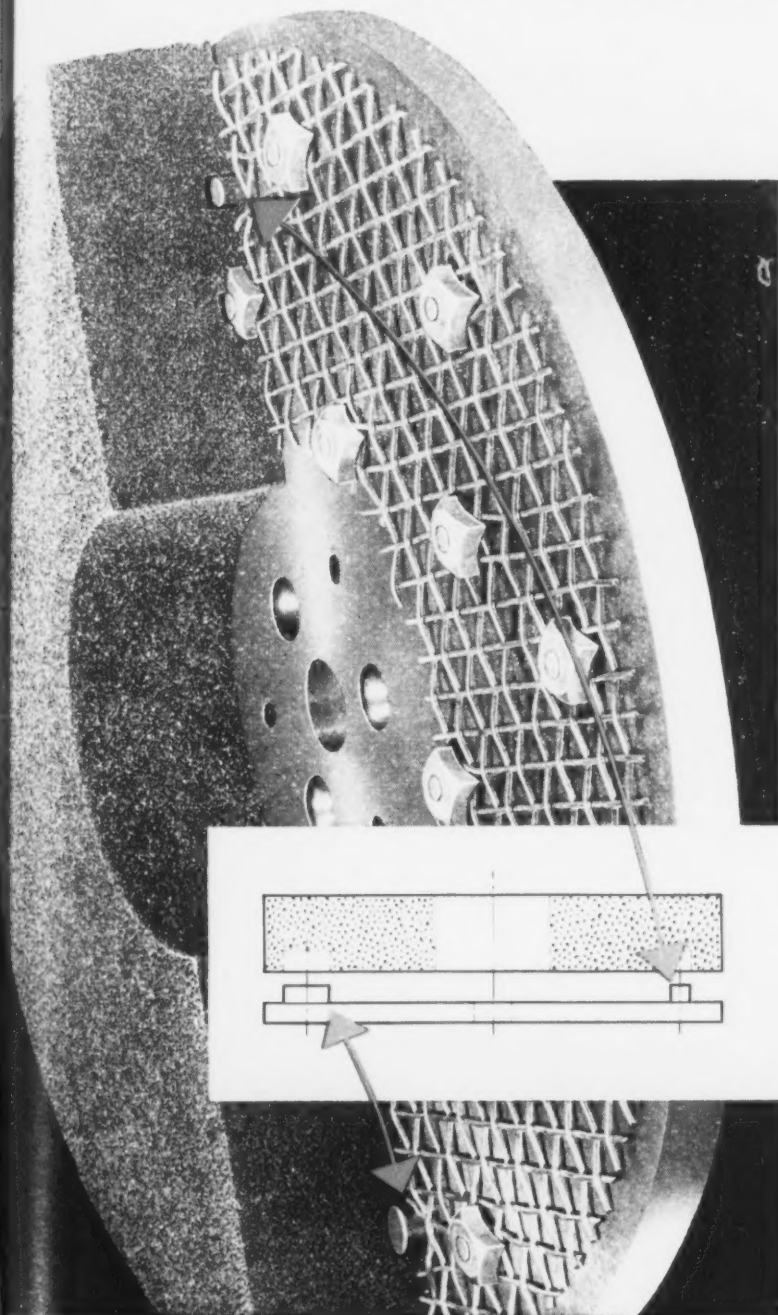
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ELS

PIPE AND
PLATES

IRON AC

Compare the Grinding Precision of This Abrasive Disc With Other Makes



Grinding to close tolerances is no problem with Gardner abrasives. Precision work is made easier because factory trueness is maintained throughout the entire life of the disc.

On Gardner discs provided with the Tru-Lok feature, it's impossible to make an off center mounting. On job after job maintaining trueness assures better finishes and closer tolerances. Doweled Tru-Lok mounting aligns the holes in the abrasive and the steel wheel.

This exclusive Gardner feature is another reason why Gardner Abrasive Discs are first choice among users of flat surface grinders. New Gardner grinders are equipped with the Tru-Lok feature. It can also be made available for older machines.

Gardner engineers abrasive discs to fit specific grinding requirements. For help with your surface grinding problems, call the nearest representative in our nation-wide service organization.



Technical Information Dept.
GARDNER MACHINE COMPANY
Beloit, Wisconsin

Please send me the Gardner Guidebook for Surface Grinding.

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COMPANY _____

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CITY _____

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GARDNER

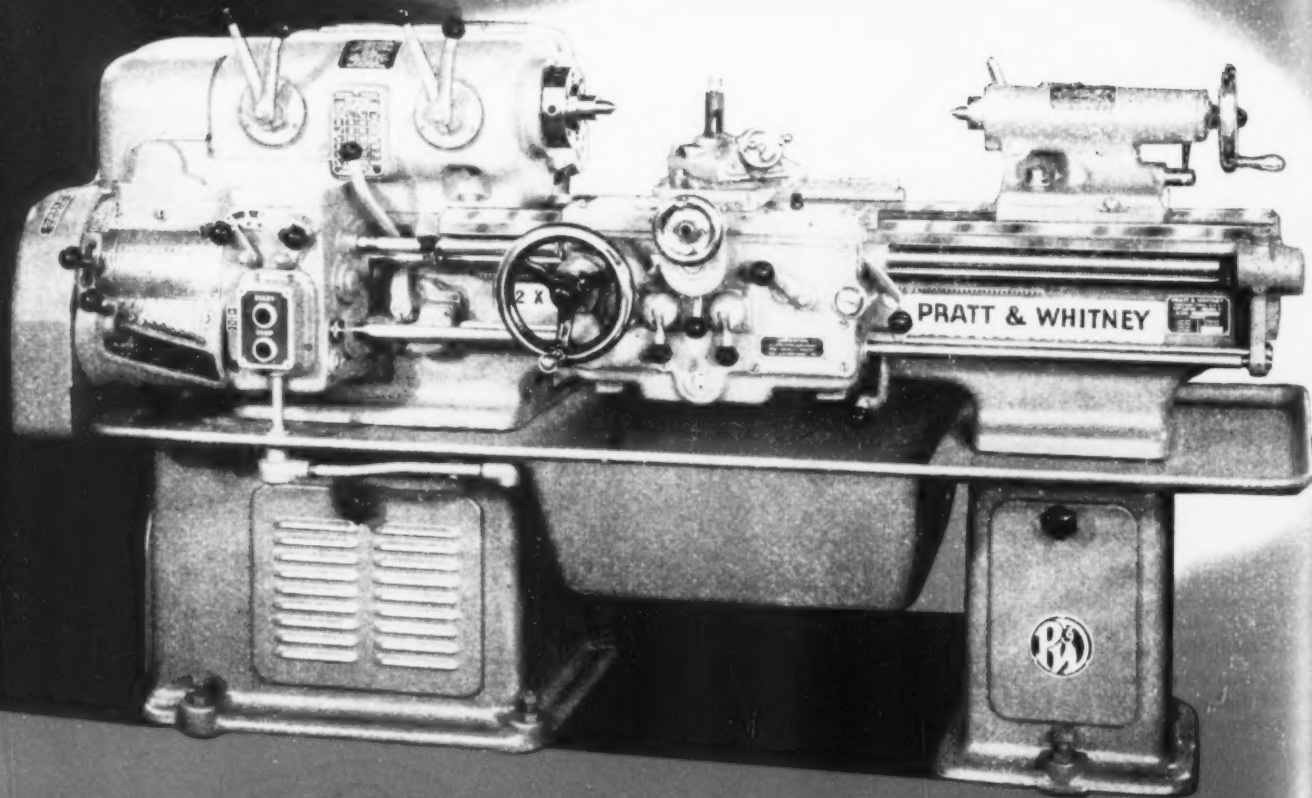
abrasive
discs

PRATT & WHITNEY

MODEL "C"

Lathes

"THE STANDARD BY WHICH ALL FINE LATHES ARE JUDGED"



PRATT & WHITNEY

DIVISION NILES-BEMENT-POND COMPANY

WEST HARTFORD 1, CONNECTICUT, U. S. A.



First Choice  *for Accuracy*

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LOS ANGELES • NEW YORK • PHILADELPHIA • PITTSBURGH • ROCHESTER • SAN FRANCISCO • ST. LOUIS • EXPORT DEPT., West Hartford

MACHINE TOOLS • CUTTING TOOLS • GAGES

EVERY DETAIL

OF
DESIGN,
SELECTION OF
MATERIALS,
MANUFACTURE AND
INSPECTION

that can contribute to

PRECISION PERFORMANCE and CONVENIENT OPERATION

in the Modern Tool Room

HAS BEEN
INCORPORATED IN THE

PRATT & WHITNEY

MODEL "C"

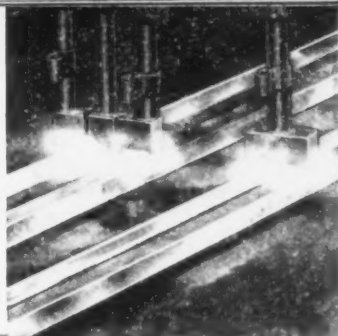
Lathes

12", 14" and 16" Sizes

Write on your Company letter-
head for complete information.

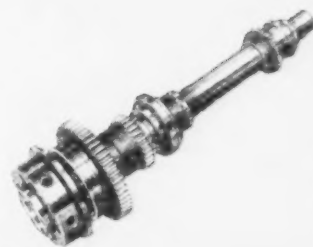
FLAME-HARDENED AND PRECISION-GROUND BED WAYS

are constructed of specially selected materials processed by exclusive P&W methods. Automatic lubrication from a reservoir in the carriage is provided. The result is great resistance to wear, permanent stability and a high initial accuracy indefinitely retained.



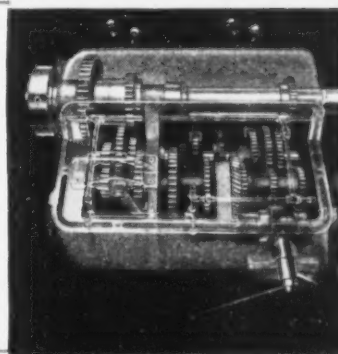
SUPER-PRECISION SPINDLE

is mounted at the front end in two preloaded precision bearings and at the rear end in anti-friction type needle bearings.



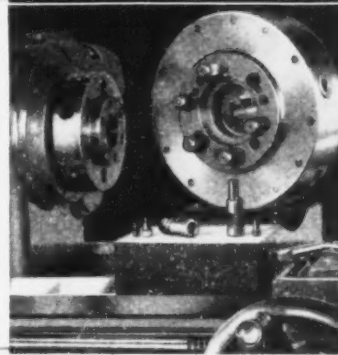
HEADSTOCK GEARS

of hardened and ground alloy steel are accurate in tooth form and spacing to "tenths". Multiple splined gear shafts are mounted throughout on anti-friction bearings. 18 spindle speeds in smooth geometrical progression are provided.



CAM-LOCK SPINDLE NOSE

is recognized by the American Standards Association as the most rigid and permanently accurate means of holding chucks and face plates to the spindle. Operation is safe and convenient; there is no danger of a chuck's freezing in place or being thrown off in high speed operation.



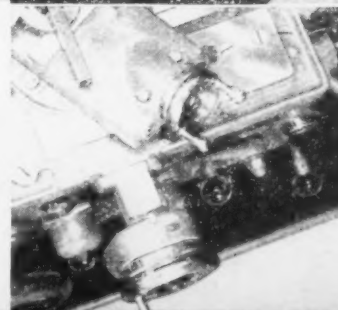
SEPARATE LEAD SCREW AND FEED ROD

preserve the original accuracy of the machine. The lead screw is used only during actual thread cutting, and in ordinary turning operations the carriage is moved entirely by the splined feed rod. Wear that might impair precision is reduced to a minimum.



LARGE DIRECT-READING DIALS

contribute to speed, accuracy and convenience in operation. The easy-to-read graduations give work diameter reductions in thousandths of an inch on the cross slide and on the compound rest.





ALCOA—
your first source for
**ALUMINUM IMPACT
EXTRUSIONS**



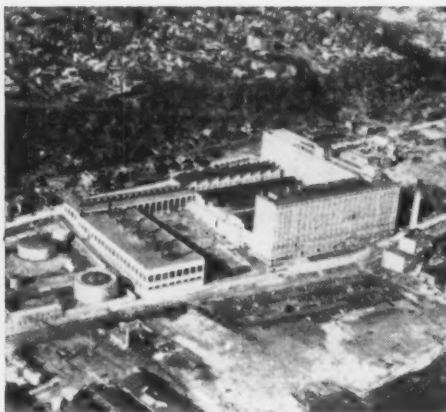
"SEE IT NOW" with Edward R. Murrow — CBS-TV every Sunday . . . brings the world to your armchair. Consult your newspaper for local time and channel.

ALUMINUM COMPANY OF AMERICA

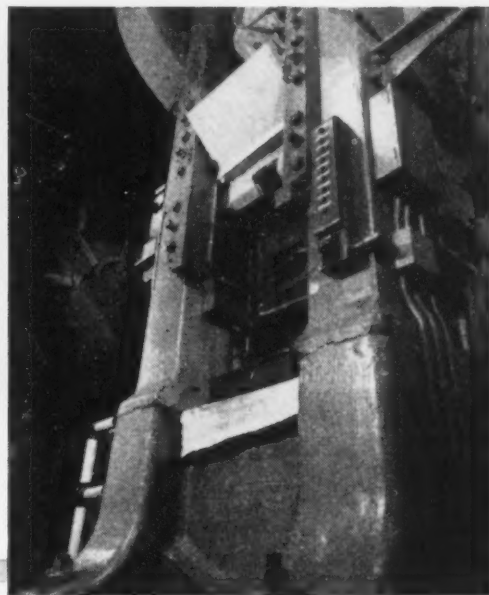
Facilities like these mean satisfaction with your source of supply—



HIGH PRODUCTION from Alcoa facilities is typified by this battery of impact-extrusion presses equipped with automatic trimming units.



THE ALCOA PLANT, located at Edgewater, New Jersey, indicates the large impact-extruding capacity available at Alcoa. All the services of design consultation, estimating, production and secondary operations are performed here.



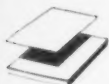
PRESSES OF ALL SIZES enable Alcoa to offer you facilities that permit free thinking in your engineering designs.

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- 30 years' experience in making impact extrusions; 64 years' experience in working with aluminum.
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Ask ALCOA first whatever you need in Aluminum

Your local Alcoa sales office is headquarters for "everything" in aluminum. Look for Alcoa under "Aluminum" in your classified phone book.

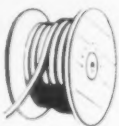
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SHEET, PLATE, FOIL



TUBE, PIPE AND PIPE FITTINGS



ELECTRICAL CONDUCTORS



EXTRUSIONS AND ROLLED SHAPES



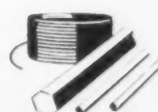
CASTINGS AND FORGINGS



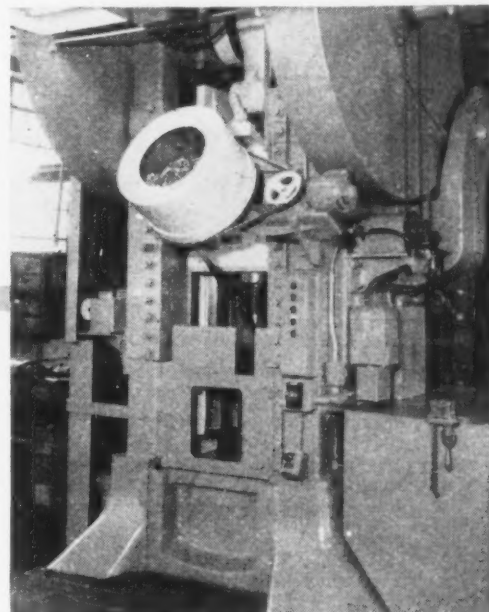
FASTENERS AND SCREW MACHINE SPECIALTIES



PAINT PIGMENTS, FLUXES AND LUBRICANTS



WIRE, ROD AND BAR



ALCOA'S NEW PRESSES not only extrude the desired section but trim it automatically as well.

ALCOA *first in* ALUMINUM



**PAGES
MISSING
ARE NOT
AVAILABLE**



**What's the best
block insulation for
1900F?**

**SUPEREX ...
with the proved record
for long service!**



**The most widely used
high temperature block insulation
for over a quarter century...**

SUPEREX[®] high temperature block insulation has long been industry's No. 1 choice for service temperatures up to 1900F. It provides *major* economies . . . reduces fuel costs, cuts heat losses, keeps maintenance expense down, costs less to install and has long service life.

These are the reasons why 90% of the nation's hot blast stoves are Superex insulated . . . and why the low cost open hearth steel producers use Superex in their regenerators.

Made of specially selected and calcined diatomaceous silica blended with other insulating materials and bonded with asbestos fiber, Superex will safely withstand temperatures up to 1900F with negligible shrinkage.

Superex has been used with outstanding success in all types of industrial and metallurgical furnaces and ovens, stationary and marine boilers, auxiliary power plant equipment, regenerators,

kilns, roasters, high temperature mains, flues and stacks.

**Superex has all these
important advantages...**

Low thermal conductivity—Exceptionally high heat resistance (1900F) combined with excellent insulating value.

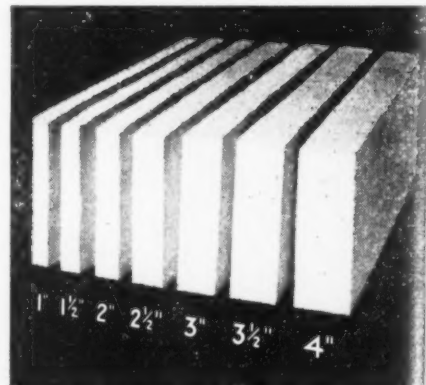
Light weight—Approximately 2 lb per sq ft per in thickness.

Great physical strength—Approximately 6 tons pressure per sq ft are required to compress Superex 1 in.

Long, efficient service life—Superex maintains high insulating value indefinitely—will not disintegrate in the service for which it is recommended.

Fast, easy application—Superex may be cut with an ordinary knife or saw for fitting around openings or to irregular surfaces. Because of its light weight and convenient sizes, Superex assures fast and economical installations.

For complete information about Superex block insulation, write for Brochure IN-134A. Address Johns-Manville, Box 60, New York 16, N. Y. In Canada, write 199 Bay Street, Toronto 1, Ontario.



Waste is minimized with Superex because of the variety of thicknesses available. Special shapes and intermediate thicknesses between those shown are also available.



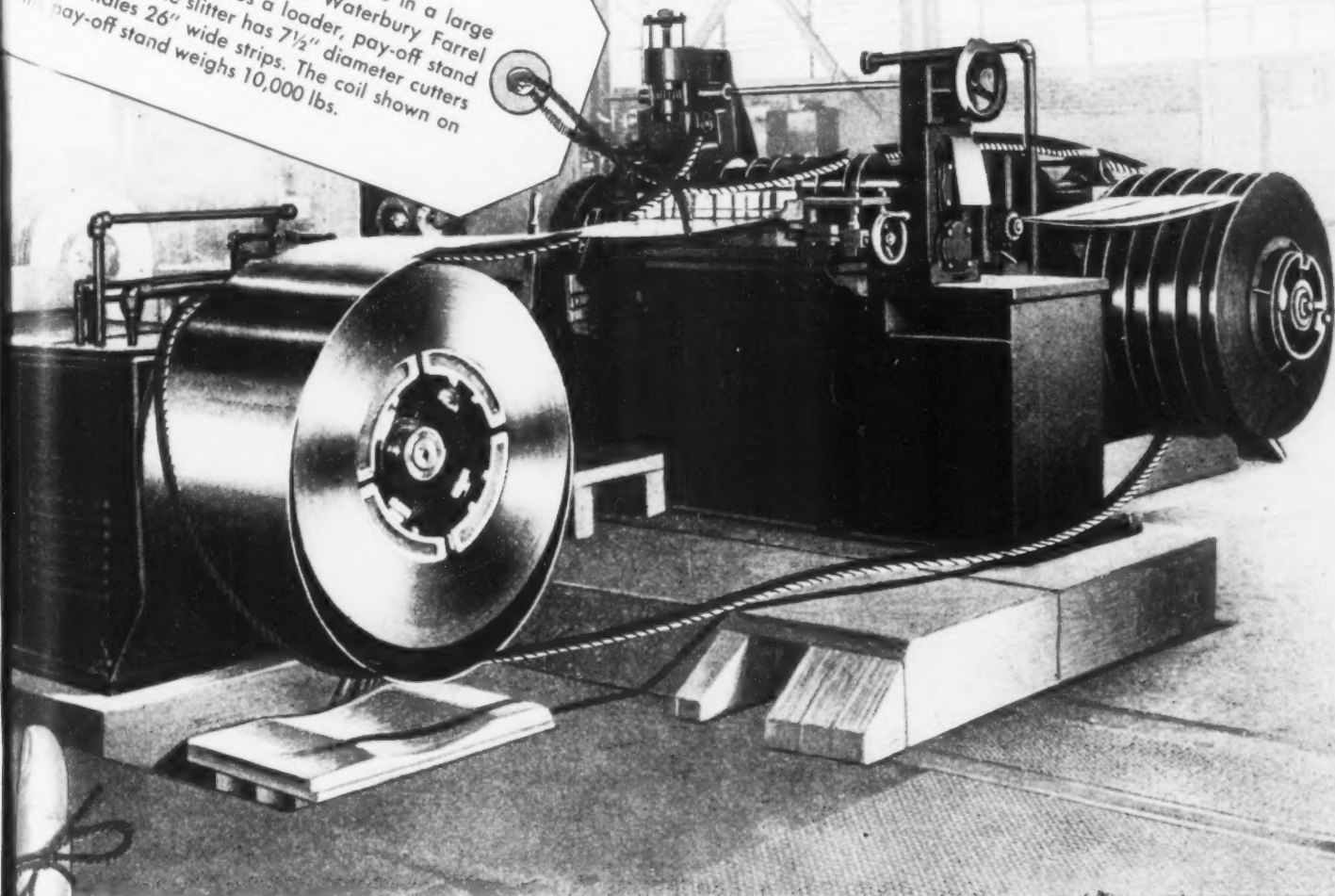
Johns-Manville

first in

INSULATIONS

BY WATERBURY FARREL

This modern, high-speed slitting line in a large steel company consists of a Waterbury Farrel No. 2 gang slitter, plus a loader, pay-off stand and winder. The slitter has 7½" diameter cutters and handles 26" wide strips. The coil shown on the pay-off stand weighs 10,000 lbs.



WHEN YOU NEED A MODERN ANSWER TO SPECIFIC SLITTING REQUIREMENTS

Many manufacturers are finding that slitting their own strip pays in time and dollars.

From Waterbury Farrel you can get modern, high-speed slitting machines fitted by type, size and accessory equipment to your specific requirements.

There are six standard sizes of Waterbury Farrel gang slitters capable of handling a wide range of gauges and widths. Accessory

equipment such as loaders, pay-off stands, winders, coilers, backrolls, scrap cutters etc., are available to make the entire slitting set-up a Waterbury-Farrel "package".

Special attachments can be "engineered-in" when necessary to adapt the slitters to special applications.

Phone, write or wire for complete information.

WATERBURY FARREL FOUNDRY & MACHINE COMPANY

WATERBURY, CONNECTICUT, U. S. A. • Sales Offices: Chicago, Cleveland and Milburn, N. J.



Remember this:

A FEW OF THE MANY TYPES OF METAL WORKING MACHINERY MADE BY WATERBURY FARREL

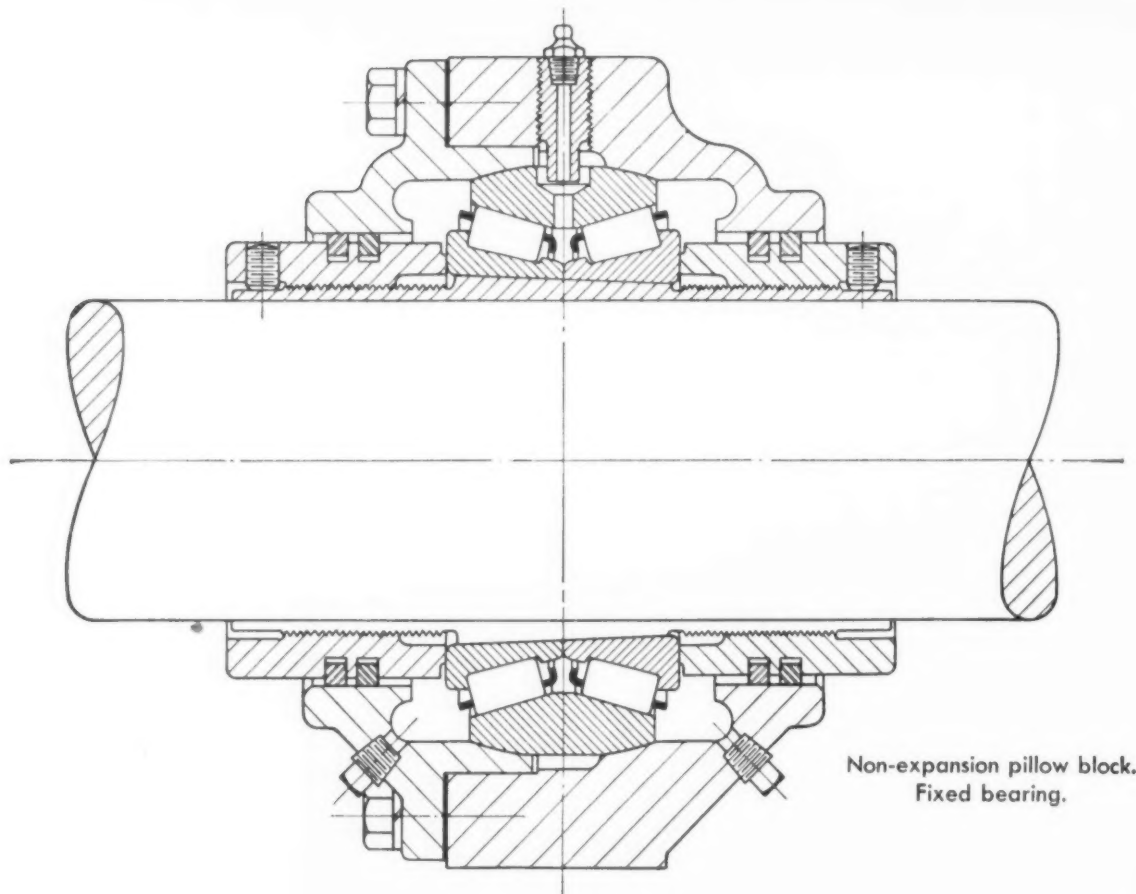
PROCESS BOLT AND NUT MACHINERY — Headers (all types) • Re-headers • Trimmers • Thread Rolling Machines • Slotters • Nut Tappers, etc. **POWER PRESSES** — Crank • Cam and Toggle; also Rack and Pinion Presses • Multiple Plunger Presses including Horizontal Drawing Presses and Eyelet Machines; Hydraulic Presses, etc. **MILL MACHINERY** — Rolling Mills • Wire Flattening Mills, Chain Draw Benches • also Slitters • Pointers • Swagers • Cut-off Saws • Coilers • Winders and related equipment. **WIRE MILL EQUIPMENT** — Continuous Fine Wire Drawing Machines • including Upright Cone and Tandem Wire Drawing Machines • Bull Blocks • String-up Machines • Spoolers, etc.

WF-1

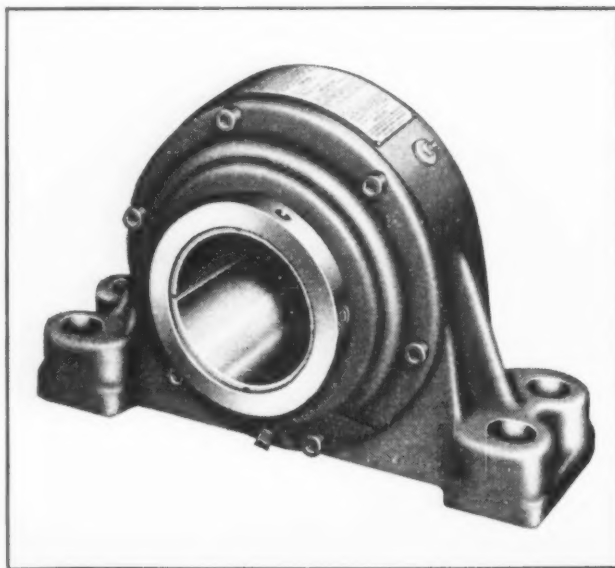


In Equipment, Experience Count

NEW TIMKEN® ROLLER



First application of new tapered makes new Dodge-Timken®

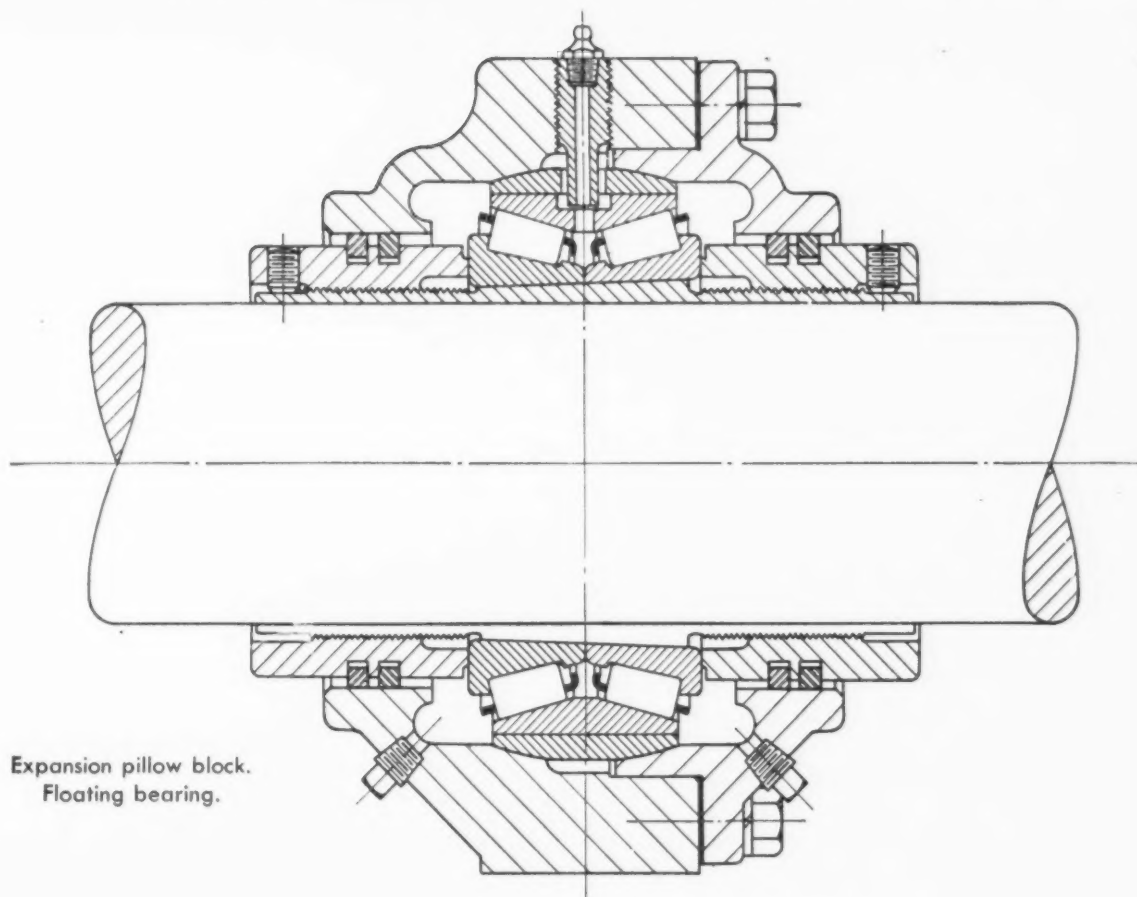


IT takes up less space. It weighs less. Yet the new Dodge-Timken® All-Steel pillow block has tremendous load-carrying capacity.

It's the result of the combined achievements of the Dodge Manufacturing Corporation, Mishawaka, Ind., and The Timken Roller Bearing Company and makes use of an entirely new Timken bearing. Never before has a self-aligning, non-adjustable tapered roller bearing with tapered bore been used in pillow blocks.

Being of all-steel construction, this new Dodge-Timken pillow block is more compact and fills a real need where space is a factor. It is available in both expansion and non-expansion designs. And it incorporates all the advantages of Timken tapered roller bearings.

R BEARING PILLOW BLOCK



Expansion pillow block.
Floating bearing.

bore TIMKEN® bearing pillow block more compact

Because of their tapered construction, Timken bearings take radial and thrust loads in any combination. Line contact between rollers and races gives Timken bearings load-carrying capacity to spare. Timken bearings are made of the finest steel ever developed for tapered roller bearings—Timken fine alloy steel—and under normal conditions will last the life of the machinery with which the pillow blocks are used.

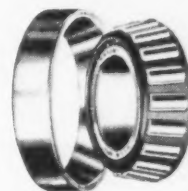
When you install new Dodge-Timken pillow blocks, you can expect dependable performance because the bearings are the best. No other bearing can give you all the advantages you get with Timken

bearings. Specify them for all your other machinery, too. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



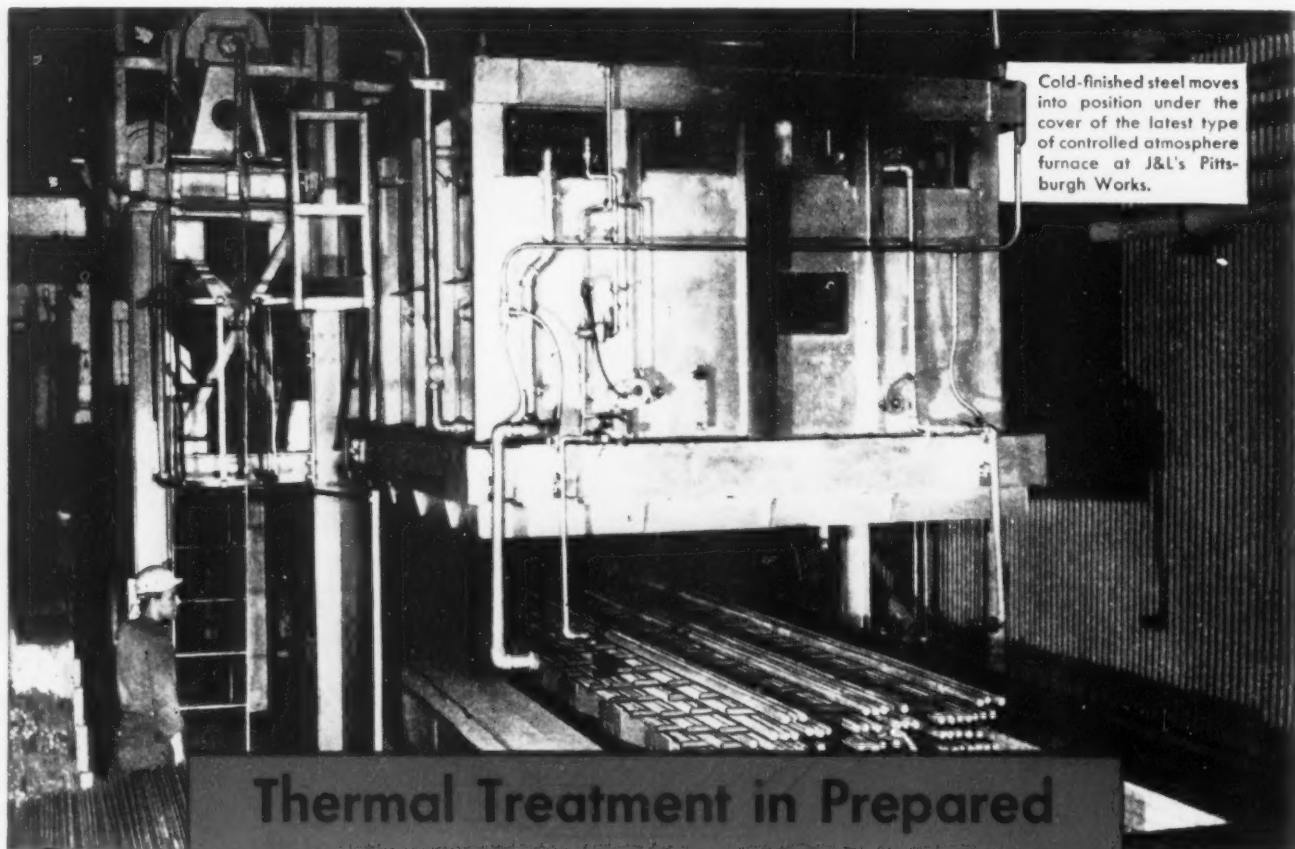
This symbol on a product means its bearings are the best.

TIMKEN
TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

Let J&L CARBON RESTORED Cold Finished Bars cut your production costs



Cold-finished steel moves into position under the cover of the latest type of controlled atmosphere furnace at J&L's Pittsburgh Works.

Thermal Treatment in Prepared **ATMOSPHERE FURNACE** saves you the cost of removing "Decarb"

Why incur the cost of removing "decarbed" surface from parts requiring high surface hardness? To eliminate these costs and lower your unit production cost, simply order J&L Cold-Finished Carbon Restored Bars.

This furnace is designed to permit other thermal treatments, such as annealing, normalizing, stress relieving and strain drawing. These treatments can be employed to improve machinability or to meet desired mechanical properties.

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH 30, PA.



Jones & Laughlin Steel Corporation
403 Gateway Center, Pittsburgh 30, Pa.

- ☐ Without obligation please send me your booklet "Extra Services to Users of Cold Finished Steel."
☐ Please have your representative call.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

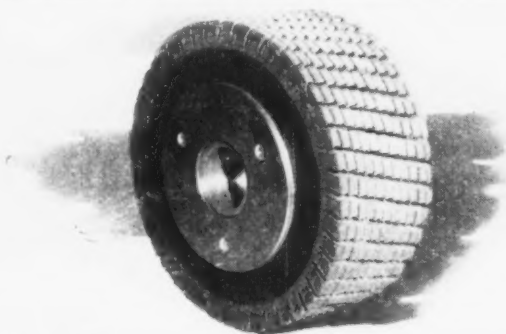
How would you solve it?

Production problem:

Break a "bottleneck" caused by standard weld-removal methods on cold-rolled steel stator shells



1 Here's what Century Electric Company, Saint Louis, Missouri, did. They turned their weld-removal problem over to a 3M Methods Engineer, who studied the problem with Century Electric specialists and came up with a solution.



2 3M's recommendation was a conversion to backstand equipment with fast-cutting abrasive belts. A specially engineered contact wheel was recommended—plus the right abrasive belt, grit size, and operating speed.



3 Now Century Electric uses the 3M Method to finish stator shells 800% faster than with the previous equipment. Production has jumped from 15 to 125 pieces per hour with smoother finishes too!



4 3M maintains Demonstration Rooms in principal cities throughout the country, where abrasive engineers will demonstrate how you can cut *your* grinding and finishing costs. For additional information on the 3M Method, write for a copy of the "Step UP Production" booklet, Dept. 1A 102, Minnesota Mining and Manufacturing Co., St. Paul 6, Minnesota.

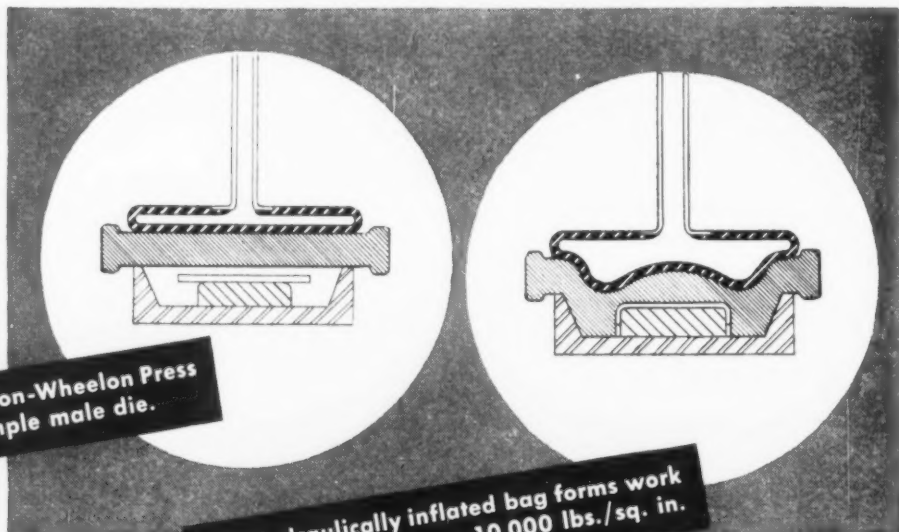


Made in U.S.A. by MINNESOTA MINING & MFG. CO.,
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Sound Recording Tape • "Underseal"® Rubberized Coating
"Scotchlite"® Reflective Sheeting • "Safety-Walk"® Non-slip
Surfacing • "3M"® Abrasives • "3M"® Adhesives.

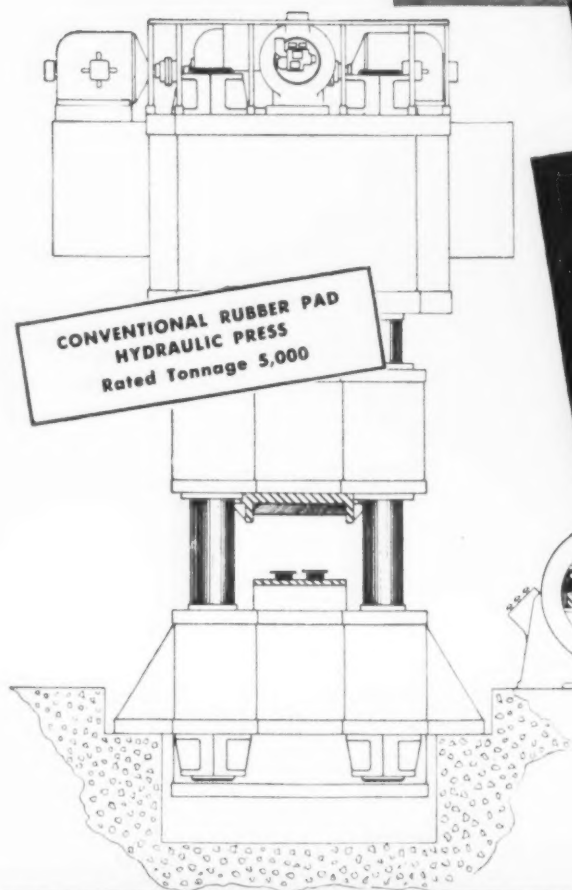
LOOK AT THIS NEW METHOD OF RUBBER PAD FORMING!

- Completely Revolutionary
- Costs Less
- Eliminates Hand Work
- Simple Male Die Only
- No Set-up Time



1. Blank inserted in Verson-Wheelon Press over inexpensive, simple male die.

2. Hydraulically inflated bag forms work at pressures up to 10,000 lbs./sq. in.

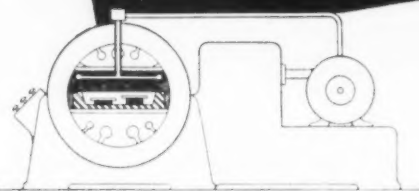


**CONVENTIONAL RUBBER PAD
HYDRAULIC PRESS**
Rated Tonnage 5,000

**DONE BY THIS LITTLE
VERSION-WHEELON PRESS**

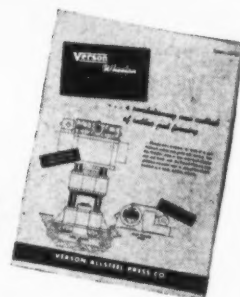
Rated Tonnage 10,800

With this little press, heavy gauge metal is completely formed—it will even make perfect return flanges! Compare it with the big, expensive conventional rubber pad forming press at the left which seldom turns out pieces not requiring further hand forming.



GET THIS BULLETIN!

... Complete information of the Verson-Wheelon Press and the revolutionary new rubber pad forming process. Ask for Bulletin VW-52.



Originators and Pioneers of Allsteel Stamping Press Construction

VERSON ALLSTEEL PRESS COMPANY

9314 South Kenwood Avenue, Chicago 19, Illinois

So. Lamar at Ledbetter Dr., Dallas Texas

A Verson Press for Every Job from 60 Tons Up

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING

THE IRON AGE Newsfront

SHOWER COOLING IN A NEW BLASTFURNACE being constructed has replaced cooler plates in the shaft zone. The carbon block lining in this area is not insulated from the outside shell plates.

PURCHASING AGENTS ARE MORE OPTIMISTIC OVER STEEL SUPPLIES than government agencies or mills. They are more impressed with unexpected good luck in finding enough material to keep plants operating at a good clip than with procurement problems.

THIRD BUSINESS CYCLE WORRIES MANY ECONOMISTS. We've had two trips on the economic merry-go-round--before and after Korea. We may be ready for a third. Big worry! We've avoided devaluation (at a time when the government pays debts by taking in more money than it pays out) which must come eventually.

SPORTS CAR PRODUCTION BY FIVE AUTO BUILDERS is scheduled for 1953. It reflects growing hot rod influence, impact of European cars, and the acute competitive instincts of the auto industry.

STEEL OUTPUT DOWN 10 MILLION TONS from last year is the outlook of 1952. This holds despite recent record breaking performance and expectation of even higher output between now and year end. We lost 19 million tons in the 54-day strike. Terrific expansion helped offset this. Actual capacity now is believed to be about 114 million net tons. Official rating Jan. 1, 1952, was 108.6 million tons.

AIRPLANES ARE GETTING TOO COMPLICATED. Since every pound of extra equipment adds \$400 to cost and usually reduces combat availability, chief engineer of one aircraft company argues weight and cost can be reduced with no sacrifice of safety and performance. He feels military aircraft are too complicated.

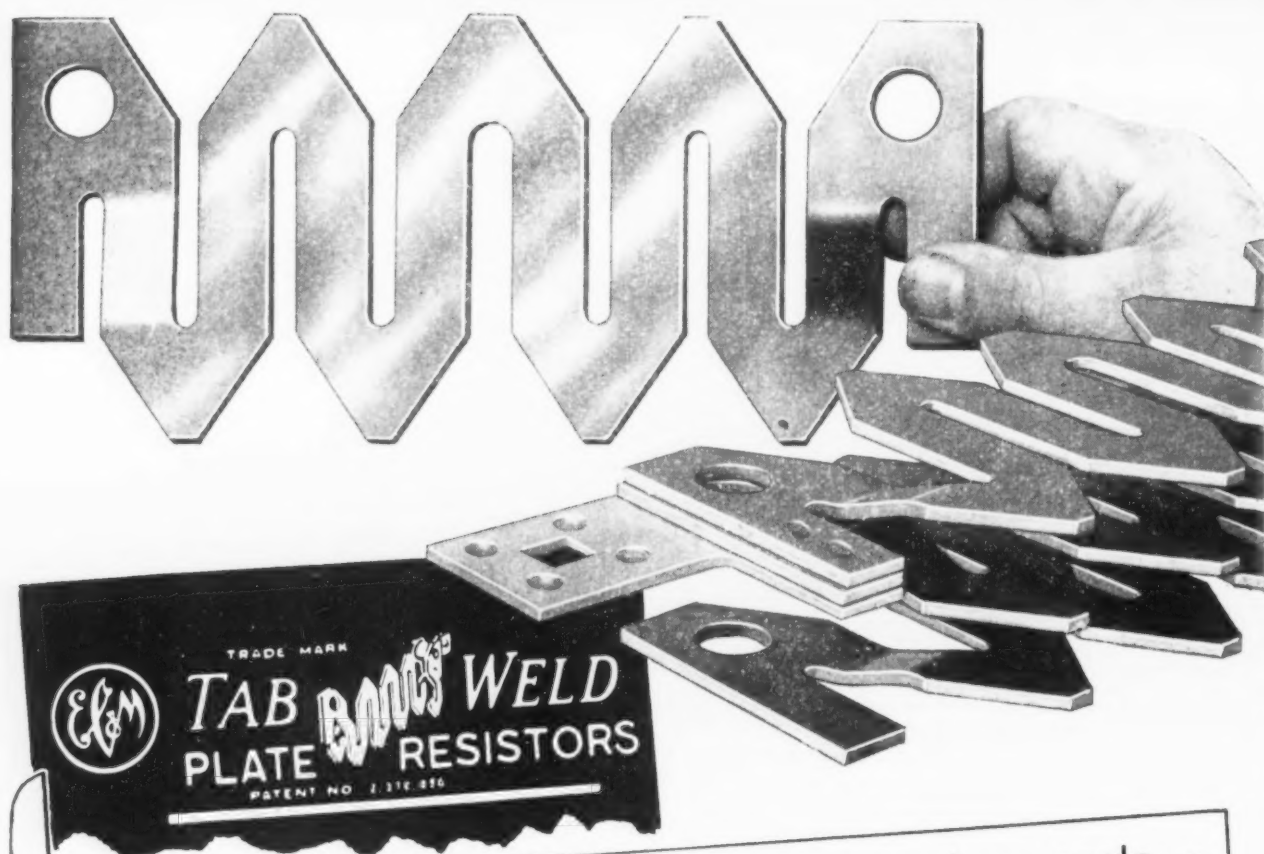
A BIG BOOST IN RUTILE PRODUCTION in spite of present high supply is sought by government planners. Construction will begin soon on beneficiation plants for extraction of rutile from Florida sands. Officials believe current 19,000 ton production rate should be boosted by 6000 tons within 2 years.

DISTORTION-FREE STOCK REMOVAL BY HONING ID of thin walled main cylinders of landing gear is practical. Technique developed by Air Force subcontractor bites off 0.048 to 0.058 in. Method replaces boring with carbides, generates less heat.

FLOTATION AND GRAVITY SEPARATION OF OPEN PIT ORES should produce 400,000 tons of concentrates by 1956. Developed by Cleveland-Cliffs Iron Co., method grinds iron bearing rock. Grindings are chemically treated, introduced into flotation cells in form of mud. When air bubbles through mass, iron particles adhere to bubbles which float upward and are skimmed off.

ARMY TANK OUTPUT WILL HIT PEAK NEXT SPRING at a level of about 750 medium tanks per month, then level off. Rate now is about 500 per month. Output of 105 and 155-mm shells will remain high for next 24 months.

NEW HEIGHTS IN HIGH COMPRESSION ENGINES will be found in next year's cars. One new V-8 engine is scheduled with a compression ratio of 8.5 to 1. In the horsepower race, 205 is now tops.

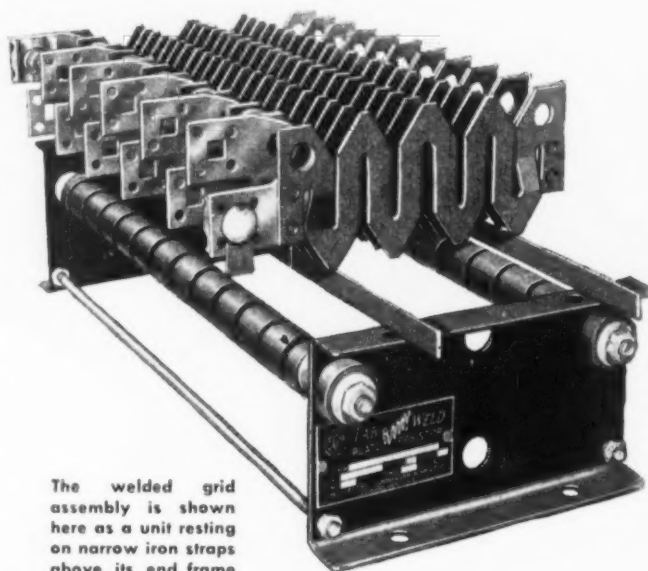


designed to save manpower and reduce upkeep costs ◦

The welded GRID-ASSEMBLY steps up resistor-performance these 3 ways:

- 1-STABILIZES the ohmic value, independent of the clamping-nuts.
- 2-STOPS BURNING at grid-eyes and at tap-plates.
- 3-SIMPLIFIES tap-shifting, when adjusting resistance for best motor operation—also makes it easier to replace sections.

For reduced maintenance where maintenance can be easily overlooked, switch to EC&M Tab-Weld PLATE RESISTORS.



The welded grid assembly is shown here as a unit resting on narrow iron straps above its end frame support rods, and spacers.

SPECIFY BULLETIN

942

EC&M TAB-WELD RESISTORS



THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET



CLEVELAND 4, OHIO

STEEL: Gear Expansion to Market Outlook

Lack of interest in adding new capacity for some items reflects fear of low normal demand . . . Present facilities can make more than peacetime needs—By J. B. Delaney.

The steel industry's disinterest in adding new capacity on some products currently in short supply boils down to this: Long-term demand for these products is below the industry's present capacity to produce.

No steel executive in his right mind will recommend spending millions of dollars to construct a finishing mill when he can foresee that demand for the product of that mill, once we return to a peacetime economy, will not be enough to operate it at a profit.

That is the crux of industry-government differences over new capacity for such products as heavy standard rails, large diameter bars, heavy structural shapes and bearing piles, plates, and seamless pipe and tubing. National Production Authority is now making a survey of the industry's ability to produce these items.

Balance—Steel executives look at it this way: Current strong demand for these critical products is due to a combination of war-peacetime circumstances that are beginning to show signs of easing. It won't be long, they say, before supply will catch up with demand on virtually all the products concerned.

One industry analyst comes up with these predictions:

(1) If military demand does not greatly expand we will be over the hump in large diameter bars within the next 9 to 12 months.

(2) We will be out of the woods on heavy plates within 12 to 18 months.

(3) Within 6 to 7 months demand versus supply of heavy

structurals will be approaching a balance. Industrial expansion is past the halfway mark; construction during the next several years will not be nearly so heavy as it has been. Structural steel fabricators report inquiries already are falling off.

(4) Demand for seamless pipe for pipeline construction will be off at least half in the next 18 months. Demand currently is running at the rate of 2 million tons per year; the forecast is that this will drop to around 900,000 tons.

(5) Regarding need for expanding oil production to compensate for loss of Iranian oil, consensus of experts in this field is that we already have more than made up for loss of this oil.

Structurals — The industry points to structurals as an example of how the current gun-butter economy has expanded demand to approximately what it was at the height of World War II. Shipments of structurals and

piling in 1951 totaled 5.3 million tons, compared with 5.29 million tons in 1942, biggest single year of the war. Shipments through May of this year were at the annual rate of 5.1 million tons. The 2-month steel strike aggravated an already-tight market.

In contrast to abnormal heavy structural demand during defense buildup and war, the industry in 1940 shipped 3.35 million tons. In 1949 shipments were 3.97 million tons, and in 1950, 4.5 million tons. Industry capacity, according to American Iron & Steel Institute, is approximately 5.7 million tons.

Reluctance Recognized—Industry reluctance to invest in expanding capacity of products not considered likely to continue in strong demand is recognized in the seventh quarterly report to the President by the Director of Defense Mobilization. Says the report:

"Once the difficult problem of estimating requirements has been surmounted, the question arises as to how sufficient private investment can be obtained. By their very nature, the additional facilities needed would not be fully

ANNUAL SHIPMENTS OF STEEL PRODUCTS—1940-1951
 ALL GRADES INCLUDING CARBON, ALLOY AND STAINLESS STEEL
 (Net Tons)

Products	1940		1942		1944		1946		1948		1951	
	Shipments	Pct	Shipments	Pct	Shipments	Pct	Shipments	Pct	Shipments	Pct	Shipments	Pct
Wire rods	1,072,264	2.3	994,255	1.6	989,737	1.5	679,959	1.4	610,348	0.9	847,369	1.1
Rails	1,574,065	3.4	2,062,239	3.4	2,481,882	3.9	1,935,310	4.0	2,181,400	3.3	1,819,757	2.3
Wire, wire products	2,569,337	5.6	3,314,361	5.5	3,439,393	5.4	3,260,589	6.7	4,300,794	6.5	4,849,576	6.2
Tin and black plate	3,047,183	6.6	3,204,393	5.3	3,212,713	5.0	3,740,167	7.7	4,790,866	7.3	5,581,987	7.1
Plates	4,065,383	8.9	11,612,987	19.2	12,630,062	19.7	4,152,181	8.5	7,000,199	10.6	7,910,594	10.0
Sheets and strip	12,553,427	27.4	10,228,259	16.9	12,197,362	19.0	14,140,198	29.0	19,743,338	29.9	25,276,878	32.0
Bars, other than reinforcing	6,131,997	13.4	8,830,820	14.6	10,450,629	16.3	7,909,953	16.2	9,717,720	14.7	10,866,456	13.8
Pipe, tubes	3,920,200	8.6	4,716,061	7.8	6,052,282	9.4	4,655,505	9.5	6,881,549	10.4	9,311,871	11.8
Shapes, steel piling	3,333,450	7.3	5,290,162	8.8	3,967,390	6.2	3,679,597	7.5	4,554,892	6.9	5,321,043	6.7
Reinforcing bars	1,360,368	3.0	1,765,845	2.9	663,901	1.0	1,189,829	2.4	1,541,966	2.4	1,900,125	2.4
Ingot, blooms, billets, slabs	4,233,407	9.2	4,931,704	8.2	6,292,505	9.8	1,955,890	4.0	3,140,441	4.8	3,555,593	4.5
Other products	1,889,744	4.3	3,513,688	5.8	1,825,703	2.8	1,478,315	3.1	1,499,625	2.3	1,677,099	2.1
Total	45,850,825	100	60,464,774	100	64,193,159	100	48,775,532	100	65,973,138	100	78,928,950	100

STEEL: Openhearth Yield Boosted

Furnace experts tell Pittsburgh AISI meeting of new techniques for increasing production . . . Speedier heating after rebuilding, more attention to operating details stressed.

The steel industry might be able to increase capacity as much as 780,000 tons annually by speeding up heating of openhearth furnaces after rebuilding, according to Hobart N. Kraner and Charles N. Jewart, ceramic engineers for Bethlehem Steel Co.

In a paper presented at the Pittsburgh regional technical meeting of American Iron and Steel Institute, the engineers stated they were able to put a furnace into operation in less than 17 hr after rebuilding. In 1951 this accelerated heating schedule provided additional furnace availability equivalent to at least 25,000 tons at Bethlehem Lackawanna plant.

Industry-wide, the authors said, time taken to put an openhearth into production after rebuilding varies from 18 to 108 hr. By carefully controlling temperatures and by other measures the engineers said they were able last year to average 22 hr, 22 min from time repairs were finished until first steel was tapped.

Higher Output—Other means of increasing openhearth production were described by T. J. McLoughlin, assistant to vice-president-manufacturing, U. S. Steel Co. These include: (1) Maintaining maximum fuel input while doors of openhearth furnaces are open.

(2) More even distribution of raw materials inside the furnaces. (3) Better location of auxiliary equipment. (4) Planned efforts to reduce time for charging furnaces, making repairs, etc.

The author said one openhearth shop in March 1952 produced 21 pct more steel than in January 1951 solely through close attention to these details. In one plant in 1 month the number of heats in the under 10-hr class were increased to represent more than 78 pct of all heats. About 12 hr formerly was considered standard openhearth heat time in the industry.

CARS:

NPA plans aid to freight car makers in second quarter of '53.

Production officials are planning to do something to help freight car builders accelerate the rate of production. But the aid is not likely to be available before second quarter 1953.

This action is being planned as a result of a meeting last week at which representatives of the industry asked National Production Authority for more priorities and supplemental allocations to bolster sagging production.

Summoned to Washington by the agency to discuss the slowdown, industry representatives

making up the advisory committee said that production delays were largely due to four major factors.

These were listed as inadequate materials allotments, unbalanced inventories, delays in steel deliveries, and the inability to place all CMP tickets.

Steel Shortages—Most car builders are operating at from 50 to 80 pct of capacity, the committee reported. This is due chiefly to shortages of structurals, wide plates, heavy castings, and center sills.

Something like 30,000 cars were lost as a direct result of the steel strike, it was estimated.

Admittedly, the industry said, railroads are not placing orders at previous rates. But the roads apparently see no reason for a rash of new orders while old orders, some as much as 2 years old, are still on the books.

After a severe drop in early 1952, new orders now appeared geared to actual production it was reported. This is indicated by a pickup of new orders during the third quarter.

NPA has requested the car-building industry to provide it with complete data on production facilities. The agency also wants to know how much steel would be needed during second quarter 1953 to bring production back to something near the government's program of 10,000 freight cars monthly.

"Give us enough CMP tickets, make the mills take them and make deliveries—and we'll meet the programmed quotas," said the industry.

Special Report

Continued

utilized, and therefore perhaps not be profitable, before and after a wartime need."

The report concurs with the position of the President and Congress that government construction of plants "should remain a last resort." It concluded with the suggestion that loans, special contractual arrangements, and tax amortization might be used to en-

courage private industry to expand capacity to produce products urgent to a successful mobilization.

Meanwhile National Production Authority is surveying the industry to find if additional steel expansion is necessary. The idea, NPA says, is to determine if present growth plans sufficiently consider proper capacity for certain

critical types of steel — such as heavy plate which would be needed in a heavy war emergency.

NPA feels that the industry will meet its expansion goals on an overall basis. Questionnaires have been sent to finished steel producers, asking data on 1950 shipments of eight major types of products plus estimated maximum potential production as of Jan. 1, 1954.

Ford Finishes Foundry

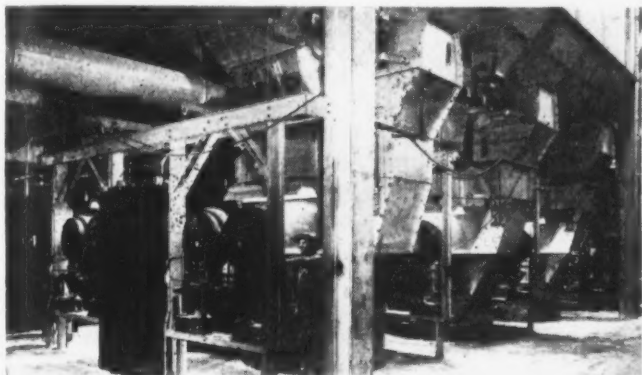
Now nearing completion in Cleveland is Ford Motor Co.'s mammoth new foundry. These are the first pictures released for publication of the new 1.2 million-sq. ft plant. Features include a huge indoor sand handling and storage system, semi-and-fully-automatic core blowers, ten cupolas and eight molding lines.

A special feature is a production cleaning system. Ford boasts this will be one of the cleanest foundries in the world. Over 8 million gal of recirculated water will be used in 16 hr to sluice away dirt and dust.

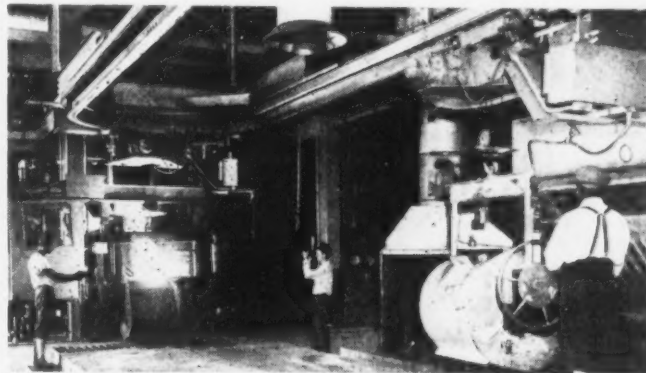
Ultimately the foundry will employ 3500, will make all Ford in-line 6-cylinder and Mercury V-8 blocks, heads, and other cast iron components.



This 54,000-ton inside core sand storage bin will make Ford's Cleveland Foundry independent of ice troubles during the winter months, insure moisture-free, uniform sand.



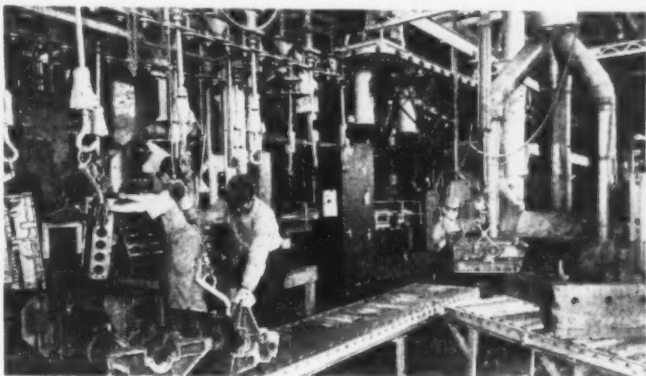
Weighed sand and cereal binder is delivered automatically to this battery of six mullers. Core oil is metered and delivered by pipeline.



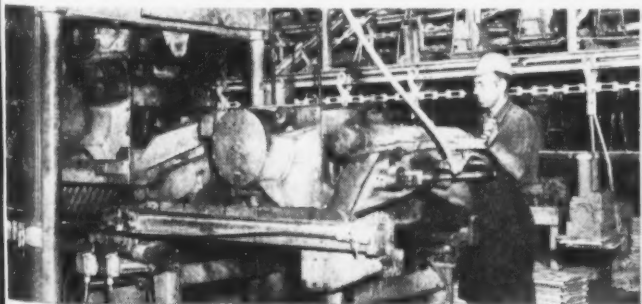
Speed of these 1000 and 2000-lb ladles is synchronized with conveyor line of molds. A 6-cylinder block can be poured in under 20-sec.



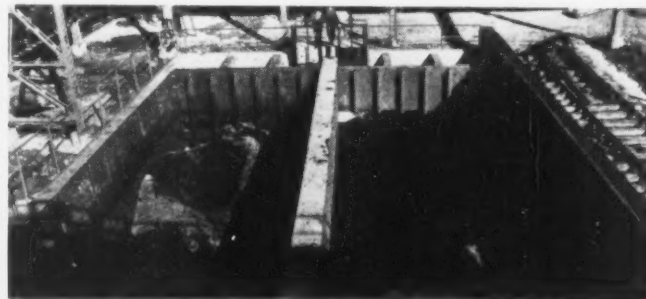
Electric control panel tells the operator at a glance which bins are full of sand and which are empty by means of red and green lights.



After core knockout, 30-in. grinding wheels (right) remove flashing from head and pan faces. After grinding, blocks are shot blasted.



Two operators run this semi-automatic core blowing machine for 6-cylinder Ford engines. Cores move by conveyor direct to ovens.



Accumulator reservoirs hold cupola slag and dirt from sluicing system. Filters clean incoming air, and electric precipitators trap dirt in stacks.

INVENTORIES: Hard to Keep Legal

NPA checking compliance with 30-day limit on steel . . . Violation seen widespread . . . Many regard rule as unenforceable nuisance . . . Many hardship cases seen—By K. W. Bennett.

A cross-country spot check of manufacturers' steel inventories was underway last week as National Production Authority sleuths hastened to see if industry was living up to the letter of the law in holding down stockpiles to required 30-day limits. But the watchdog seemed to have sponge rubber teeth, and the inventory order was regarded by many as an unenforceable nuisance.

Realistic industrialists knew that the real curb on inventory would be the steel shortage itself. Many manufacturers remembered the effectiveness of NPA's previous order limiting inventory to 45 days. How well this was adhered to was obvious when firms operated through the 54-day steel strike and weathered after-effects of disrupted supply lines.

A report from one heavy manufacturing district indicated a few firms had unloaded steel from inventory in anticipation of an NPA visit. One firm reportedly killed an order for 5200 tons of steel. Some plants had been working toward a lower inventory level anyway because business prospects or market outlook did not justify tying up capital.

Hardship Cases—But the majority of firms made no waste motions in trimming their steel stockpiles. Many felt that it was impossible for them to live up to the order and extenuating circumstances (very real production problems making the order impractical) would be sufficient proof of "hardship" to win an exemption. Others did not have enough steel to worry.

Although the NPA ruling calls for limiting inventory by individual items and not on an overall tonnage basis, some plants believed they were in excess on some items but short on others. The

fact that they were not above 30 days on an overall tonnage basis seemed to them an adequate excuse.

Probably the most important reason for lack of excitement over the probe was that NPA's limited staff could cover only limited ground. The odds against any individual plant being visited could be likened to the chances of being struck by lightning.

Has 6 Months—A user of structurals and forging quality rounds had a 6 months supply of alloy rounds over 6 in. in diameter. "I couldn't get those rounds in another 6 months if I'd let these go by." In this item he was far over inventory. In several items he was far under. But tonnage-wise, overall inventory was over the 30-day level. He was carrying unfabricated tonnage for delivery to customers at a date later than specified in his original order. (For that he could probably qualify for an inventory exemption.)

A spring jobber was notified by one of his customers that an order

involving 30,000 lb of wire was being cancelled. When this tonnage was left in his hands, it pushed him well over a 30-day supply. His overall inventory is now over the 30-day limit from a total tonnage standpoint and over in a number of individual items.

Will Cut Down—A large user of plate, bar, and sheet says he could work on a 30-day limit and will try to cut to that level. But he will not have cut his inventory to the required limit until December. The inventory order expires Dec. 31, 1952. His normal buying pattern calls for a 60-day inventory. Thus he has 7000 tons of raw steel on hand, of which 3500 tons would be allowable.

Pointing out the difficulty of bringing down his inventory, he recalled that a 10 pct increase in inventory one year ago (\$5 million) required a year to wipe out. Because he is extremely short on axle stock and tubing it will be difficult to maintain high enough production that would melt inventory away. Shortages of components and single items forces rescheduling, with leftover steel going into inventory again. Since he is not ordering items in which he is overstocked and has taken some of the material on minimum mill orders, there is no intent to defraud. He anticipates no action by NPA.

Closes One Plant—A large user of sheet, plates and bars, has shut down at least one plant, believed he would open it when a 45-day inventory was achieved. Normal inventory is 60 days. He has many items over normal inventory, some running as high as 6 months or better.

A consumer of hot and cold-rolled sheet has 60 days of light sheet inventory, 45 days of heavy sheet. Since this business is scattered, local inventories sometimes exceed the overall figure. In one plant, when local business fell off, inventories accumulated to a 6-month level. It would take him a minimum of 60 days to reduce this to 30-day levels in all items.



"You look wonderful with your hair up, Josephine."

TV: How Can Your Plant Use It?

Industrial video applications grow . . . Manufacturing takes medium over from show business, puts it to work . . . Useful on dangerous jobs, difficult testing—By G. G. Carr.

Milton Berle is a long way from a steel mill. But television is making a strong bid to be as useful to industry as it is to show business.

Closed-circuit transmission of major surgery first dramatically spotlighted the new medium's non-entertainment potential. New applications are being turned up all the time.

Basically, industry can use TV wherever direct observation is too dangerous, inconvenient or expensive, where several processes must be watched at once, and where large groups must view the same operation.

TV is a natural for hazardous jobs. A foundry operation at Babcock & Wilcox Tube Co.'s Beaver Falls, Pa., plant required that the mold be kept filled with molten metal at all times. A man was stationed directly at the mold top during pouring. Footing was insecure, the position dangerous, the air murky with fumes and smoke. Now the worker watches a TV screen a safe 50 ft away.

Greatest cost saving through TV may be where one operator can control a number of processes at the same time. A steel mill installed TV to allow one operator to push slabs into three reheating furnaces. The system replaces an extra worker. Savings will pay for the equipment in about a year.

How Much—Big question for industry, of course, is how much does it cost. Like practically everything else, you get what you pay for. Top-quality, stereoscopic color cameras can run \$35,000 to \$40,000 apiece. But these jobs are usually saved for special uses, like handling radioactive substances.

Black-and-white picture quality equivalent to the best home entertainment sets is also expensive—about \$20,000 for a camera and accessories. For an image of this

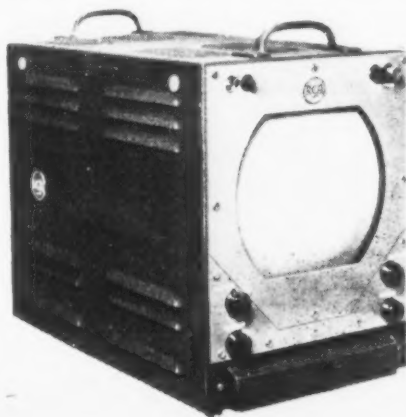


quality a \$1200 image-orthicon tube is needed. These last only about 600 hr. The \$2-per-hr operating cost, plus initial investment, will chill a lot of companies.

Fortunately most industry doesn't need anything that good. A new type tube, the vidicon, costs only about one-third that much. It won't show all the fine detail of the orthicon, but is adequate for most installations. Camera equipment runs about \$5500.

If you need only to check general shape or position of an object, you get off even cheaper. Still another tube, the image dissector, is widely used in industrial installations. This one lasts almost indefinitely, and needs little care. It's the heart of a camera system which goes for about \$4200.

Checkout — Monitoring and inspection are basic TV applications.



Remote or inaccessible operations can still be important. Boiler operation, for example, can be critical, particularly in steam generation of electricity. Flame shape, boiler water level and smoke density are all important measures of operating efficiency. A simple TV system allows one boiler room operator to watch them all with ease. Radio Corp. of America also monitors its powerhouse smokestack at Camden, N. J., as an air pollution control measure.

Before television its was impossible to watch interior stresses of airplane wing sections during destructive testing. Stress and strain gages showed the results of loading to failure, but direct observation was impossible. With TV, engineers can view the behavior of the material itself as it reaches stress limits.

In another application, a new plane engine developed bugs. Explosion danger ruled out direct observation of tests. A system of mirrors was installed in the test chamber, but engineers still couldn't see what they wanted. A TV camera picked up a fuel leak even before the engine was running. Immediate design changes forestalled dangerous explosions.

Hot Stuff—Radioactive material gives TV some of its best chances. At one plant the operator must manipulate the hot stuff by remote control and watch color changes at the same time. A stereoscopic color TV system with high picture quality does the trick.

Less tricky, but equally important is remote instrumentation of jet engine tests, rocket firing and explosion checks.

Traffic Control—Television can be adapted for nearly all types of traffic control. In railroad and truck yards, dispatchers can keep track of vehicles without leaving their desks. General Motors' Fisher Body Div. installed a unit on the control panel for conveyers moving scrap to the baler at its Pittsburgh plant. Screen shows operator when cars are loaded.

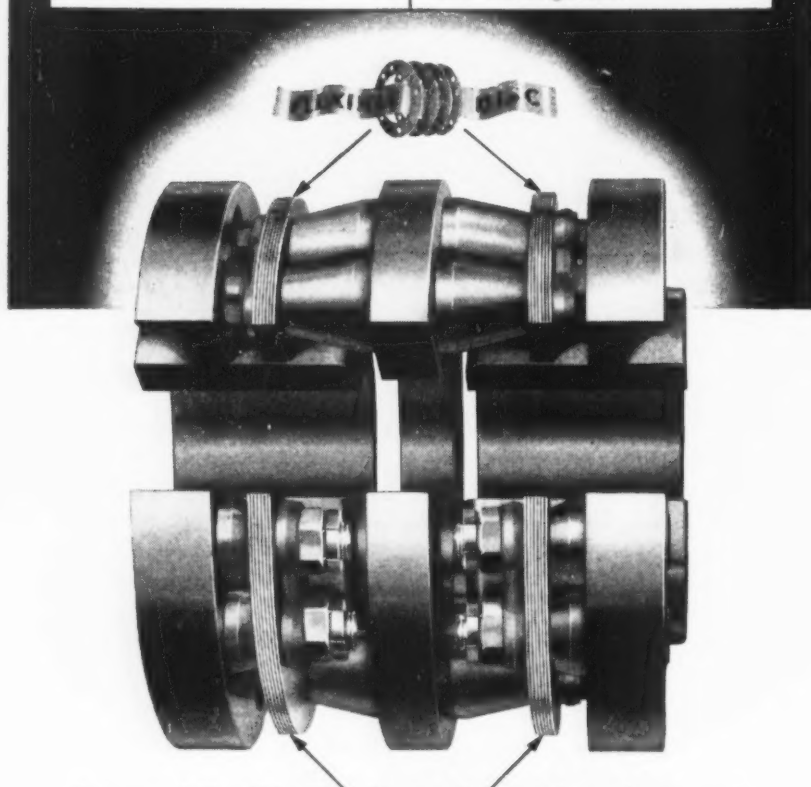
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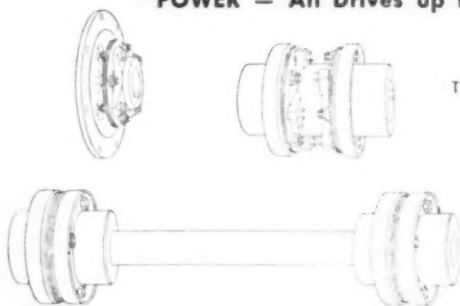
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Management

transparent. Hanna Coal Co. found that the operator couldn't see actual bucket action on a new power shovel. But for maximum efficiency the 50-cu-yd bucket had to take a full bite each pass. A camera mounted on the vertical crane boom transmits the action to a screen in the cab.

Other Uses — Some businesses are finding non-plant uses for TV.

Industrial Video Applications

Wind Tunnel Tests
Time Study
Oven and Furnace Operation,
Smoke Control
Remote Telemetering
Inspection — processes, machines, gauges, etc.
Plant Intercommunication
Transmission of prints, photos, drawings, etc.
Foundry and Rolling Mill Operations
Materials Handling Control
Meetings, Shows, Exhibits and Demonstrations
Office Intercommunication
Transmission of signatures, balances, records, etc.
Streets, Railway Yards, Bus and Truck Terminals
Ships and Docks

One application that's being talked about, although not widely used as yet, is an intra-office hook-up. With this, firms could hold meetings at which specialists could show new techniques, charts, methods, etc., without the audience leaving its desks.

It's New — Industrial TV is a newcomer. Process engineers are still often unfamiliar with the medium. And TV equipment makers are just now developing specialists in industrial applications. With each job practically custom-made from drawing board to plant, cost is high. Wider use will make it considerably cheaper.

Acid test for industry is not so much initial cost as potential savings. This will vary from job to job. Big picture seems to be similar to electronic control. Industry at first balked at the cost, then developed money-saving applications.

SHORTAGES: Plan Ahead to Beat Them

Look 5 years ahead, assume full scale defense output, then plan to meet those requirements on strategic materials . . .

New materials group known as "Band 1"—By A. K. Rannells.

Government agencies have been told to speed up their programs for "minimizing"—or overcoming—shortages of certain strategic materials needed for defense production and for strategic stockpiling purposes.

All planning is to be on a basis of looking 5 years ahead and acting on the assumption that requirements then will be on a full scale mobilization level.

It's hinted that the government may try to make a new excursion into the field of plant ownership if private industrial production or expansion does not meet the government's proposed capacity levels.

"Band 1" — A new materials grouping has been created—to be known as "Band 1." Subject to quarterly revision and additions or deletions, Band 1 materials will consist of those for which critical shortages exist and remedial steps are needed.

It is described as "a sort of Super-A group," since it will consist of the more critical of the strategic materials on the stockpiling "A" list.

Action was initiated last week when Defense Mobilizer Henry H. Fowler issued an order (ODM No. 22) establishing policy, assigning responsibility, and specifying necessary actions needed in connection with Band 1.

Major reason for the order, Fowler says, is to give the Defense Materials Procurement Agency basis and support for carrying out its programs for increasing Band 1 supplies beyond present levels.

Other than nickel, Fowler wouldn't identify the items now included in Band 1. A reliable source said that beryl, cobalt, tungsten, tantalum, and columbium are also listed.

Periodic Change—The list will be changed from time to time. Under the order, Defense Production Administration has the responsibility of making a continuing study and quarterly analysis of the situation for ODM review along with recommendations. First report is due Nov. 1.

Guided by these reports, DMPA would get the necessary authorization to expand supply along needed lines. It would continue to use one or more of the following measures, all authorized under existing legislation.

Loans and advances, tax certificates, grants for exploration and development, purchase commitments and market guarantees, subsidies, underwriting the higher cost of accelerated delivery, etc.

Likewise, the Munitions Board is instructed to give priority to Band 1 in working out stockpile goals and needs. These goals will be an important factor in ODM's planning for more production.

Build Plants? — A study by DMPA has been ordered for Band 1 items. It is intended to show whether there is need for the government to get into plant construction and ownership again—

just in case industry is reluctant to expand to recommended levels or if it's found "to the government's interest" to build its own plants rather than to buy materials.

Fowler says he now has no intention asking Congress for more authority than the mobilization agencies now have for increasing production or supplies of Band 1 materials.

Nor does he expect to recommend additional government ownership. However, it is possible, he says, that in reporting to Congress ODM might "cite specific examples where government owned facilities would expedite" needed production in the interest of national security.

Two additional major points are covered in Order No. 22. Mutual Security Agency is to provide ODM with accurate estimates of full-scale mobilization needs of allied nations with respect to Band 1.

MSA is also to work for expansion of production of these materials abroad and work out conservation programs with those nations.

First Orders Get Preference

Administrator McDonald, of National Production Authority last week emphasized that fourth quarter non-military orders calling for January-February delivery are to be given certain scheduling preferences for the remainder of the year.

This means that under Dir. 16 to CMP Reg. 1, all such orders placed with mills within the 15-day period immediately preceding the beginning of first quarter lead time must be accepted and delivered ahead of first quarter orders.

Lead time for January delivery is Nov. 1 to 15. For February, the date is Dec. 2 to 16. These dates apply to all steel controlled items with a lead time of 45 days.

This does not require cancellation of orders but provides merely for rearrangement of production schedules for delivery at a later date.



"Special job for a man who used to can sardines."

RADIOISOTOPE: New Tool for Industry

Industry interest kindled slowly . . . Radioactivity yields more profound insight into nature of things . . . Swift and accurate tool for testing and measurement—By T. Metaxas.

One of the men crowding a New York hotel auditorium last week confided that the use of radioisotopes was "creepy."

He was probably a minority of one with that sentiment—for the industry people attending National Conference Board's round table discussion of industrial applications of atomic byproducts had come with genuine interest to keep tabs on developments or to glean something helpful for their own applications of radioactivity.

From the abundant industrial applications of radioisotopes and radioactive parts described by the panel experts, the industry men grasped an obvious theme of greater research and testing accuracy, swiftness, and cost saving.

They learned that these elements and materials made radioactive by their contact with nuclear fission could solve laboratory and process control problems of measurement and analysis beyond the scope of conventional methods.

Less Interest—Yet industry's interest is being kindled slowly. Only 1000 radioisotope shipments of 27,000 from Oak Ridge have gone to industry. The great balance have found eager takers in medicine and agriculture.

Industry is putting radioisotopes to work mostly in research and testing and secondarily to improve production processes. No new product or process has evolved in industry from the use of radioisotopes.

It was predicted that Atomic Energy Commission would in the future make available a greater supply of radioisotopes when it had perfected methods to extract them from the waste fission products now so difficult to dispose of. This greater supply and better methods of packaging radioiso-

topes for shipment would stimulate their application in industry.

Elements that have soaked up radioactivity in atomic piles cry out their presence to Geiger counters and film strips. In this way they can be used as tracers to further metallurgy, chemical analysis. They tell the tale of the distribution of atoms, the interaction of atoms, the changes wrought, the behavior of elements. They can be used as tracers because radioactivity does not alter the fundamental characteristics of an element. A radioisotope will act in much the same way as its "uncontaminated" fellow. And a radioactive atom has only a certain life-span of radioactivity.

The Tags—Gamma ray and beta particle emissions are the tags discernible to Geiger counters and film that permit following the action of radioisotopes. They furnish greatly heightened accuracy, unprecedented speed in research and testing.

They can be used as a measurement tool—show the rate of wear, detect flaws and impurities, measure thickness, density, rate of travel of materials. It is possible to catch on film or record on a Geiger the presence of radioactiv-

ity or its penetration, absorption, and backscatter in materials of differing thicknesses, densities, consistencies.

One steel company worried about the effects of pyritic sulfur in coal for coking ovens used radioactivity as a tracer to ease its mind. This company was faced with the use of high sulfur coal, containing more pyritic and organic sulfur. It tagged the pyritic sulfur with radioactivity.

Resultant gas and coke was sampled for distribution and action of the radioactive pyritic sulfur. It was determined that it had no extraordinary behavior and there would be no advantage in using coal with either large or low percentages of pyritic to organic sulfur.

A producer of silverware altered its electrolytic silver plating process when it checked the distribution of radioactive sulfur in its brightener baths.

Machining Tests—Cincinnati Milling Machine Co. was able to delve more profoundly into problems of cutting machining costs by increasing cutting tool life. It worked on the premise that costs could be cut if optimum machining conditions could be found in which the least amount of metal was worn from the cutting tool while removing the most metal from the workpiece.

Four cutting tool tips were made radioactive at Oak Ridge. It was established that 95 pct of metal worn off a cutting tool could be found clinging to the chips. Since the cutting tool was radioactive the amount of metal worn off the tool could be detected on the chips.

Cuts of about 15 sec duration were made. Because of the accuracy of the Geiger counter in measuring radioactivity of chips and because tool metal could be seen on film as bright spots on the chips, these short tests were equivalent to previous ones in which the cutting tool was run to dullness. Far greater accuracy in detecting rate of wear was also possible.



"Er . . . Miss Timmins . . . I hope you're not taking my kidding too seriously."

TOOLS: Europe Keeps Foot in Door

Foreign machine tool producers hope to maintain market in U. S. . . . Trying to adapt machines to American needs . . . Recovery of West Germany industry startling—By E. C. Kellogg.

Many variables were measured in a single test. For example, two similar cutting oils were tested to show which one would permit the cutting tool to hold its edge longer. Ordinarily this test would have consumed 18 hours. With radioactivity it took a few minutes. Despite similarity of the oils it was found that one gave 11 pct more cutting time.

"Hot" Engines—Radioactive engine parts are giving automotive and petroleum industries the secrets of engine wear in different conditions and with different lubricating oils. Previously, one petroleum company testing wear effectiveness of oils weighed a piston before letting it run for many hours in an engine, lubricated by a specific oil. Then the engine was dismantled, the piston removed and weighed again. The loss of piston weight was judged to be the loss of actual metal through wear.

This company sent a piston to Oak Ridge for radiation bath. The piston was installed and run with a certain oil for a very short time. The oil was drained and tested for radioactivity by a Geiger counter. The amount of radioactivity registered told the amount of radioactive iron worn off the piston.

Radioactive Oil—The petroleum industry is also using radioactive tracers in pipelines carrying a multiplicity of oil products. Geiger counters at valve stations pick up the radiations heralding arrival of a new load of oil. This automatically shuts off valves, funnels the new stream to new tanks.

Rate of travel of a fluid or material can be measured if it contains radioactive particles that tell the story of their speed as they pass Geiger counters.

Getting back to the man who thought radioisotopes "creepy." He can adopt them to his specific needs without much fear. AEC scientists have almost abolished the health hazard and shielding is now a mastered technique.

There are too many European machine tool manufacturers and they're specializing too much on the same type of equipment.

That's the view of a group of U. S. machinery importers who recently returned from machine tool shows in Hanover, Germany, and in London. At a press conference in New York staged last week by the American Assn. of Machinery Importers, the AAMI spokesmen expressed the belief that there will be a permanent American market for imported machine tools.

Honeymoon Over — European manufacturers realize the U. S. machine tool shortage has eased and are doing their utmost to keep the trade door from slamming shut. Knowing that Americans consider European machine tools underpowered, the foreign manufacturers, particularly the West Germans, are souping up their motor ratings. Machines that used to be rated at 5 to 10 hp have been upped to 7 and 12 hp.

Not many newly designed machines were seen at the shows. The importers said this was because European producers have been too busy keeping up with present de-

mand. It is reported, however, that some new models are on the drawing boards and should be ready for the market in a few years.

One trend evidenced at the tools shows is the increased use of electronic controls. Copying attachments have become almost universal, and machines show increased rigidity and have higher spindle speeds. Use of anti-friction bearings has become more widespread, making the units better adapted to carbide tooling.

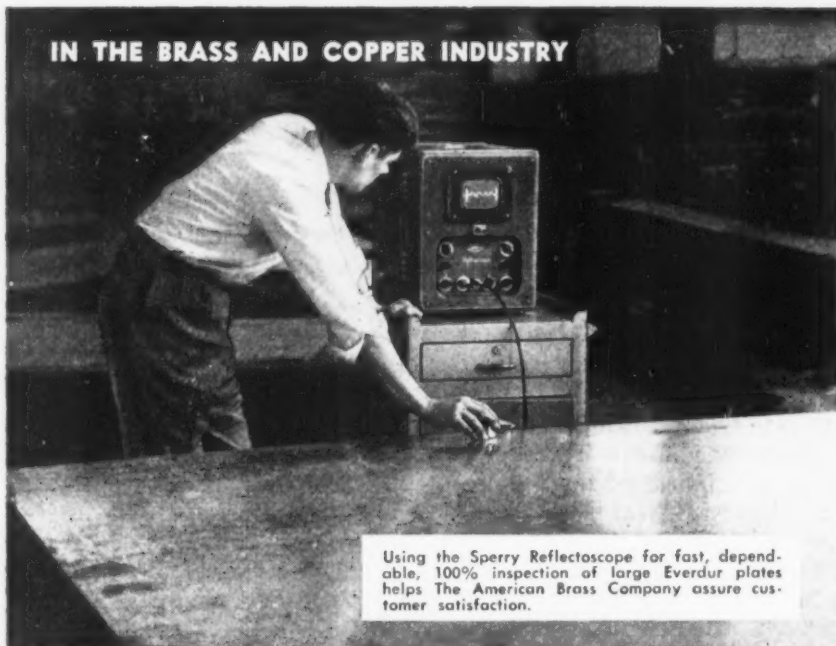
Comeback — All the importers expressed amazement at the rapid recovery of the West German machine tool industry. An unofficial estimate of German production for 1952 places it within 10 pct of the maximum output achieved in 1938. This advance is even more startling in view of the fact that in 1938 52 pct of the German machine tool industry was located in what is now the Eastern zone.

Germany is currently exporting about 40 pct of its production. Great Britain, Sweden, Netherlands and Switzerland in that order are the main markets. But from 1950 to 1951 exports to the U. S. increased seven times.



BAUXITE: Aluminum Limited has installed first rotary kiln in Africa at Los Islands, French West Africa.

IN THE BRASS AND COPPER INDUSTRY



Using the Sperry Reflectoscope for fast, dependable, 100% inspection of large Everdur plates helps The American Brass Company assure customer satisfaction.



The versatile Reflectoscope is here used by The American Brass Company to inspect cupro-nickel condenser plates.



Reflectoscope testing of work rolls protects against failure on the job with consequent work spoilage.

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Two years ago The American Brass Company adopted Sperry Ultrasonic Reflectoscope testing for their Everdur plate. Since that time, not a single plate has been rejected by a customer. Accurately and dependably locating laminations and other internal defects not detectable by visual inspection, the Reflectoscope provides rapid, non-destructive testing that helps to maintain an enviable reputation for uniform high quality.

Penetrating up to 24 feet in solid metal, the Reflectoscope is also used to inspect a wide variety of other forms and materials in the brass and copper industry.

Learn how you can reduce testing costs and improve quality control in your plant. Write today for complete information about the Sperry Reflectoscope . . . for sale, or for lease. Ask about Sperry's day to day Testing Service.



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Labor

COAL: Walk-Out

**Hot potato election issue
hits Administration . . . WSB
lops 40¢ off Lewis gain.**

Early this week it seemed that top government action would be needed to settle the coal-wage dispute. But who and how were the important questions. This was a hot potato issue to confront the Administration before the elections.

In the absence of an official strike call, soft coal miners were staying off the job in increasing numbers early this week. A full-scale walk-out, official or not, seemed in prospect.

Work stoppage was in protest against the Wage Stabilization Board's Saturday decision to lop 40¢ off the recently negotiated pay boost of \$1.90 a day.

Labor Dissents—In an 8-4 decision, with labor members dissenting, WSB said that under existing regulations an increase of only \$1.50 per day could be permitted.

Board Chairman Archibald Cox said that of this amount, \$1.05 was allowable under the cost-of-living policy. The other 45¢ was tossed in to wipe out "inequities" so as to give the miners equal treatment with "other" labor groups.

Although no specific group was mentioned, it was believed he referred partly to the recent steel agreement. A major plea for the high steelworker demands was hung on the inequity between steelworking and coal mining wages.

Taft-Hartley? — What action Washington might take was very much up in the air. Some congressmen were calling for a prompt invocation of the Taft-Hartley law.

But President Truman was even then leaving the Capitol for another 3-day whistle-stop tour and his staff told the THE IRON AGE that it was unlikely the President would consider the coal situation before his return to Washington.

Protests WSB Cut

late this week. Whistle-stopping seemed to be more important.

Whether it would take White House action to overrule the WSB in the "interest of national security" was uncertain. This was the general interpretation, however, of a statement by WSB that there undoubtedly was an overriding authority, but no precedent for such action.

WSB was backed up in its action by both Economic Stabilizer Putnam and Defense Mobilizer Fowler.

Putnam praised the WSB for holding the line and called upon the miners to abide by the board decision, pointing out that the increase as approved would still amount to about 19¢ an hr.

It was indicated Monday that for the present Fowler would not interfere in any way. He explained that it is not his intention to take individual decisions of various agencies before the Mobilization Board.

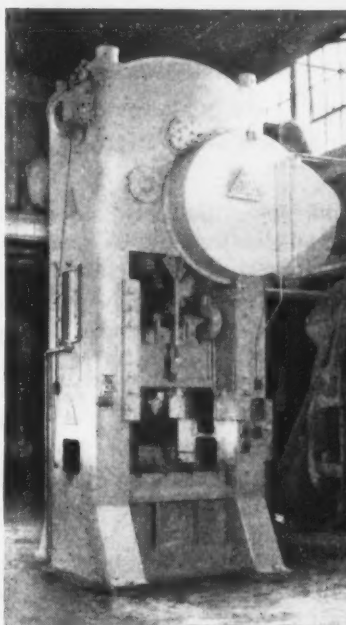
Freeze Stocks—Nevertheless, it was said that the matter came in for a full discussion at the board meeting on Monday, although not officially listed on the agenda.

Meanwhile, the Defense Solid Fuels Agency issued an order freezing all above-ground stocks of coal at the mines. This would set up a reserve of more than 1 million tons to be shipped by directive to the places which needed it most.

It is estimated that more than 81 million tons of soft coal are now above ground. This is estimated to be equal to about a 77-day supply, from an overall standpoint.

It was further broken down and estimated that coke ovens generally had about a 60-day supply on hand, steel mills about 67, and railroads about 39.

These are industry-wide estimates and do not indicate the position of the individual plants.



At left are wheel fairings drawn from age hardening aluminum.



At right, baffles with edges flanged and countersunk holes around perimeter.



At left, steel part drawn 7" deep with heavy embossment in crown.

VARIETY SHOW

From 13 gauge to one-half inch plate . . . From hot rolled steel to age hardening aluminum . . . Whatever the task assigned to it, this Clearing 400 ton crankless press has been giving dependable service for more than ten years at Leake Stamping Company of Monroe, Michigan. Clearing presses are built to give dependable performance with low maintenance costs whatever the production requirements may be.

It's always a good idea to look to Clearing for help whenever your production problems involve the forming of metal.



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GRAY IRON: Foundrymen Sweat It Out

Cautious optimism keynotes annual convention of Gray Iron Founders in Cleveland . . . Labor costs, pass-throughs, threat of buyer's market are biggest problems—By R. M. Lorz.

Gray iron founders, like most other metals men, are keeping their fingers crossed and waiting for election returns to come in.

There was an air of cautious optimism in Cleveland recently, when over 400 delegates from all over the nation met for the 24th annual convention of the Gray Iron Founders Society.

Officials in the industry state quite frankly that they expect to continue to grow and are not fretting because production has fallen off this year. They feel a change of climate in Washington and complete recovery from effects of the steel strike could push their industry ahead full steam.

Although castings production has fallen off to 8 million tons so far

this year, founders expect to hit 12 million tons by year's end. That total still will be almost 3 million tons below record output in 1951 when total production barely missed 15 million tons.

"Ify"—Gray iron men hesitate to look ahead to 1953 because they face too many "ifs." In planning for the coming year they must consider higher costs for labor and materials, fractional pass-through allowances on materials, possibility of a buyers' market if defense and civilian production level off and ever-present problems in quality control and technology.

Small foundry owners — and there are thousands in an industry which has 2500 plants scattered

throughout the country—are optimistic and confident that a continued policy of good quality and customer service will see them through.

Labor costs in the industry call for terrific cost absorption since 60 man hr are required in production of 1 ton of iron. That figure is triple the labor cost in the steel industry.

Not Enough—So far, the amount of pass-through relief Office of Price Stabilization has allowed on materials has been kept at 0.7 pct and foundrymen are feeling the pinch. Fall meetings between members of the foundrymen's advisory committee and OPS officials have resulted in scrapping of the Johnson formula as a possible solution. Final decision is expected around the end of November when a "streamlined" OPS net profits survey of 200 producers will be completed.

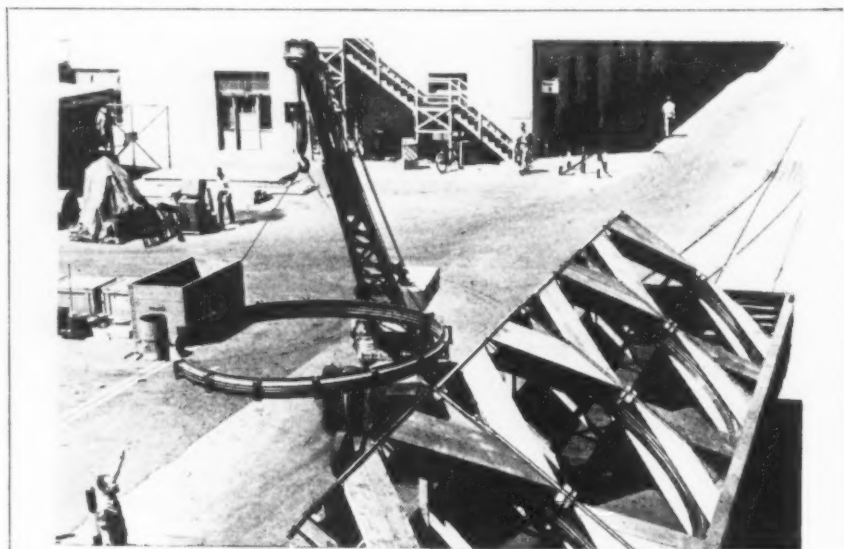
Foundry owners who have been actively selling since early last spring are doubtful about consumer reaction to a price increase.

Technology, casting design and quality control also figure prominently in industry plants. Gray iron people are going all out on development of nodular iron, basic cupola and shell molding processes.

Future Plans—Quality control and its mechanics were also stressed at the convention by speakers who outlined means and ways of organizing productive quality control programs. Speakers hammered at need for continuing controls from scrap pile to inspection room in the search for the "perfect" casting.

Society members also plan to concentrate on casting design and educational programs aimed at cutting down encroachment by other metals.

While contributing toward production of fragmentation shells, artillery pieces and a host of other defense items, society members are promoting still greater recognition of castings in defense.



Expansion Joints Made to Yield

Huge metal expansion joints for gas turbine power plants are now being built by Solar Aircraft Co., San Diego. The joints have an ID of 122 in.

Each of the expansion joints, which are used to accommodate thermal expansion in waste heat boilers and regenerators, has three convolutions. These form a leakproof joint which give when the sections they connect expand or contract with temperature changes. The convolutions are made of 0.14-in. 321 stainless.

PLANNERS: Ask for Standby Controls

Administration must ask Congress for renewal of controls authority next year . . . Need has diminished . . . New angle is standby laws . . . Industry men in Capital—By W. V. Packard.

Trial balloons labeled "Standby Controls" have recently been floating over Washington thicker than a wartime barrage. There are several reasons: (1) The controllers will have to seek new authority from a new Congress early next year. (2) Their case for controls is getting weaker every day, as industrial expansion moves nearer its goals and consumer goods continue plentiful. And (3) Original reasons for installing controls are no longer valid.

This calls for some fancy foot work by those carrying the ball in Washington. Result: They admit that the need for controls is lagging. But, in the next breath, they insist that standby authority to reimpose them is needed. Their explanation is that it takes a long time to make controls effective, and a worsening emergency might catch us flat-footed.

Blank Check?—Many people in industry regard this as an alarming line of thinking. They say that Congress would in effect be handing the Administration a blank check which might be used at its own discretion. Even if it were not used, the threat of its use would be a weapon.

Among the strongest advocates of decontrol are industry men who have served in Washington. They do not criticize temporary government control during time of emergency. But they are outspoken in their fear of permanent encroachment of economic freedom by the planners in Washington.

Full Cooperation—In Defense Production Administration and National Production Authority there are some 320 representatives of industry. Even though they were opposed to controls many companies have cooperated

fully by sending their best men to serve in Washington. Many of the posts are filled on a rotation basis.

Recent reports from within these agencies tell of increasing difficulty in filling vacancies. Qualified people who are willing to serve in Washington are getting hard to find.

After struggling with Capital red tape, some have left town with a bad taste in their mouths. Others don't want to be associated with the Administration in an election year.

Start from Scratch—One steel executive who finished a 6-month tour of duty on the rotation system said that longer service would be better. He pointed out that industry men just about become accustomed to government red tape and the snail-pace routine when they are replaced by a successor who must start his adjustment from scratch. But he admitted that industry people, after 6 months, become anxious to be released from that "frustrating" atmosphere.

Companies have been willing to furnish some of their best men

for Washington service because they feel this is one way they can help prevent mushrooming of needless controls. They feel that the goal should be elimination not perpetuation of controls.

Another man still serving with an agency said that morale of people working with him is deteriorating. He said a lot of industry men are trying to do a faithful job but are stymied.

Blown-Up Demand—Others have pointed out that controls cause demand to be exaggerated, as consumers seek to maintain their civilian market position and tack on their defense needs. Price patterns are distorted, too, as old customers are "bumped" by ticket holders and are forced to go to more remote and sometimes higher priced sources.

One of the men who helped work out the World War II Controlled Materials Plan has opposed this CMP from the start.

A great many people in industry regard the gravest danger in controls the threat that they might become permanent. Standby control authority, they feel, would be a long step in that direction.

Small Firm Price Curbs Lifted

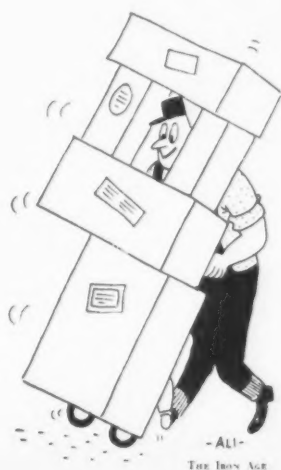
Price controls and the record-keeping entailed by them now no longer apply to some small manufacturers with annual gross sales of less than \$25,000.

Exemption authorization was allowed by Amend. 38, Ceiling Price Reg. 30 (general manufactures), and Amend. 1, CPR 150 (small pneumatic compressors).

Industry Controls This Week

Price Controls—Amend. 38, CPR 30 and Amend. 1, CPR 150 exempts some small manufacturers with annual gross sales of less than \$25,000 from price controls and OPS record keeping requirements.

Scrap—Amend. 11, CPR 5 requires that all grades of iron and steel scrap be free of dirt, non-ferrous metals and other foreign matter. Dir. 1, M-20 allows firms to report alloy scrap inventories in individual plants rather than by overall inventory for the firm.



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UNITED STATES STEEL

DEFENSE: Spending Picks Up Speed

**Military obligates \$12.6 billion in July-August period . . .
Fighting hardware takes \$8.3 billion, soft goods \$800 million,
building \$400 million . . . Air Force spending is highest.**

Defense Dept. spending, which called for obligation of \$5.5 billion for all purposes during July, was moving faster by the end of August, latest tabulations show.

In the July-August period, the military obligated about \$12.6 billion for all purposes. This amount included \$9.5 billion for major equipment and supplies, military building, and plant expansion. The Air Force led the way in this field, obligating \$5.2 billion, with the Army signing up for \$3.3 billion and the Navy for \$1 billion.

Breakdown — Divided by category, obligations for "hard goods" such as tanks, planes, ships, and other fighting machinery accounted for \$8.3 billion in the first 2 months of this fiscal year. "Soft goods" procurement, involving clothing, food, and fuel required obligation of \$800 million, and construction \$400 million. Procurement for the military assistance program made up \$93 million of the \$8.3 billion obligated for "hard goods."

Total Defense Dept. obligations in the first 26 months following the beginning of the Korean emergency have been placed at \$124.1 billion, including \$90 billion for procurement and construction. A further breakdown shows the \$90 billion included \$76.2 billion for fighting hardware, \$9 billion for "soft goods," and \$4.8 billion for building.

Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Spark plugs, 158775 ea, \$269,554, Champion Spark Plug Co., Toledo.
Spare parts, var, \$42,856, Glenn L. Martin Co., Baltimore, *P. T. Russi*.
Regulator, relay assys, 395 ea, \$159,669, Westinghouse Electric Corp., Philadelphia.
Bomb arming control, 50000 ea, \$141,000, The Magnavox Co., Ft. Wayne, Ind.
Aircraft engine maintenance parts, var,

\$8,991,363, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Aircraft engine maintenance parts, var, \$185,890, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Aircraft engine spare parts, var, \$2,424,014, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Crankshaft assys, 213 ea, \$608,178, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Spare parts for maintenance of propeller, var, \$590,157, United Aircraft Corp., East Hartford, Conn., *Adam C. Woltz*.
Aircraft engine spare parts, var, \$3,348,159, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Aircraft engine spare parts, var, \$106,435, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Aircraft engine spare parts, var, \$116,677, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Propeller spare parts, var, \$47,476, United Aircraft Corp., East Hartford, Conn., *Adam C. Woltz*.
Engine spare parts, var, \$856,668, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Aircraft maintenance parts, var, \$869,326, United Aircraft Corp., East Hartford, Conn., *Adam C. Woltz*.
Shaft assy, var, \$3,391,748, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Blade assys, 3934 ea, \$733,691, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Bearing, var, \$167,524, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Propeller spare parts, var, \$436,410, United Aircraft Corp., East Hartford, Conn., *Adam C. Woltz*.
Stand, var, \$1,952,615, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Engine parts, var, \$2,113,676, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Engine spare parts, var, \$1,535,360, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Engine spare parts, var, \$588,001, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Head assy, var, \$1,439,848, United Aircraft Corp., East Hartford, Conn., *Adam C. Woltz*.
Cylinder assy, comp, var, \$4,252,365, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.
Aircraft engine parts, var, \$2,451,410, United Aircraft Corp., East Hartford, Conn., *E. E. Champion*.

Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.")

Navy Purchasing Office, Washington.
Screwdrivers, 19644, 565-Q, Oct. 31.
Files, 104604, 6748-B, Oct. 31.
Pullers, bearings and bushings, 20445, 6736-B, Oct. 31.
Tool sets, 205 set, 6749-B, Oct. 28.
Boxes, tool steel, 3400, 6756-B, Oct. 28.
Rules, blacksmiths, steel, 28600, 6760-B, Oct. 27.
Pliers, linemans, 17150, 6762-B, Oct. 28.
Ammunition component box, 249996, 6735-O-B, Oct. 30.

Guns, spray, paint and dope, 4435, 6751-B, Oct. 24.
Reamers, carbon steel, 44300, 6752-B, Oct. 24.
Columbus General Depot, Columbus, Ohio.
Wheel w/bearing, 1812 ea, 53-155B, Oct. 29.

General Ordnance Tank Automotive Center, Detroit.

Nut safety, 2275000, 53-354-B, Nov. 10.
Washer lock, 5700000, 53-367B, Nov. 10.
Washer, lock, 7200000, 53-367B, Nov. 10.
Bearing ball, 3000, 53-314B, Nov. 10.
Bearing ball, 650, 53-322B, Nov. 10.
Fork, shifter turret hd, 500, 53-227B, Nov. 7.
Bracket mount, 200, 53-227B, Nov. 7.
Bracket mounting, 200, 53-227B, Nov. 7.
Spacer clutch, 1000, 53-227B, Nov. 7.
Cover steering gear housing, 200, 53-227B, Nov. 7.
Clip drivers seat, 500, 53-227B, Nov. 7.

Rock Island Arsenal, Rock Island, Ill.

Mount assy, 50 ea, 11-070-53-123B, Oct. 30.
Bracket, 204 ea, 11-070-53-123B, Oct. 30.
Charger, 300 ea, 11-070-53-123B, Oct. 30.
Chute assy clip, 300 ea, 11-070-53-123B, Oct. 30.
Cradle assy, 300 ea, 11-070-53-123B, Oct. 30.
Support assy, 200 ea, 11-070-53-123B, Oct. 30.
Torch oxyacetylene, 5140 ea, 11-070-53-123B, Oct. 29.
Attachment lathe milling, 200 ea, 11-070-53-203B, Oct. 30.

Ordnance Ammunition Center, Joliet, Ill.

Plug, tracer, M4A2, mpta, 203000 ea, Ord-11-173-53-16, Nov. 6.

Naval Shipyard, Portsmouth, N. H.

Boxes, distribution, sheet steel, 480, 102-9745, Nov. 3.
Switch box, 4536, PR-183/53, Oct. 31.

Springfield Armory, Springfield, Mass.

"T" cutters, 2306 ea, 53-88B, Nov. 5.
Thread hobs, 154 ea, 53-88B, Nov. 5.
Reamers, 500 ea, 53-88B, Nov. 5.

Signal Corps Supply Agency, Philadelphia.

Head cylinder, 6350 ea, 508-32D-B, Nov. 10.
Spring spiral torsion, 5300 ea, 508-32D-B, Nov. 10.
Hardware kits, 4090 ea, 260-32D-B, Nov. 10.

Watervliet Arsenal, Watervliet, N. Y.

Phosphor bronze bearing, part for 60 MM mortar, 9000 ea, 53-36B, Nov. 7.
Aluminum bronze screw, part for 60MM mortar, 6900 ea, 53-36B, Nov. 7.

Frankford Arsenal, Philadelphia.

Spare parts for sight computing M7A1, 1300 ea, Ord-53-SP-50, Nov. 24.
Fuze setter M26, var, 5 itm, Ord-53-199, Nov. 4.
Cable assy, 486 ea, Ord-53-293, Nov. 6.

Picatinny Arsenal, Dover, N. J.

Vane assy for fuze-bomb tail, 126000 ea, 68B, Nov. 5.

Construction Steel Inquiries and Awards

Fabricated steel awards this week:

1900 Tons, New Orleans, La., Palmetto St. overpass, city of New Orleans to American Bridge Div. of U. S. Steel Birmingham, Ala.
1160 Tons, Lowell, Mass., steel bridge superstructure and approach slabs to West End Iron Works, Cambridge, Mass.

Fabricated steel inquiries this week:

615 Tons, New Milford, Conn., bituminous concrete approaches and single square span curved pratt truss bridge over Housatonic River.
450 Tons, Sullivan, N. Y. and Wayne, Pa. counties, one I-beam bridge, Pennsylvania Dept. of Highways, Harrisburg, Pa., bids to Oct. 31, 1952.
192 Tons, Vernon and Tolland, Conn., new bridge at Cider Mill Road on Wilbur Cross Highway, also extensions to Skungamaug River and Gages Brook bridges, E. B. Burdick, Hartford, Conn., district engineer.

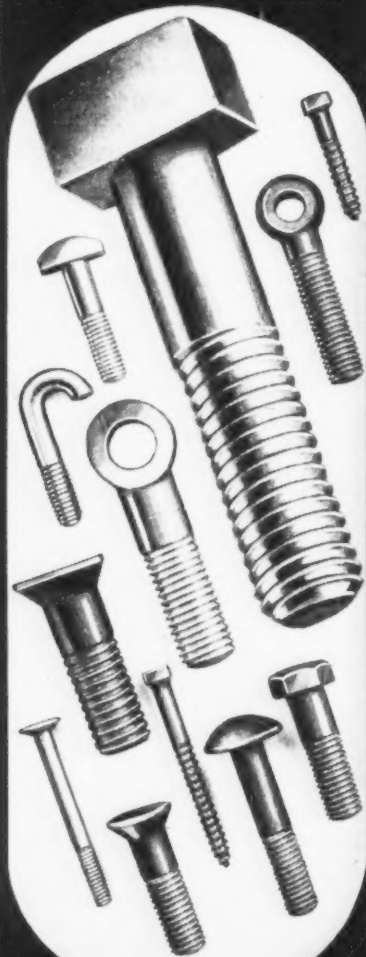
Reinforcing bar awards this week:

103 Tons, Lowell, Mass., steel bridge superstructure and approach slabs to West End Iron Works, Cambridge, Mass.

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Industrial Briefs

Installs Furnace—**WORTHINGTON CORP.** is installing an electric arc furnace in its Harrison, N. J. steel foundry. The 2-ton-per-hr capacity arc furnace is being purchased from Pittsburgh Lectromelt Furnace Corp.

Established—**KROPP FORGE CO.**, Chicago, has established a new unit known as Kropp Engineered Products, in Cicero, Ill. This unit will specialize in new and finished materials.

Citation—A letter of citation has been received by **LEBANON STEEL FOUNDRY**, Lebanon, Pa., from the Philadelphia Ordnance District for the production of castings for military tanks and for developments which have resulted in "substantial savings for our government."

Announcement—**General Machine Co. Inc.** has changed its name to **EMMAUS FOUNDRY & MACHINE CO., INC.**, Emmaus, Pa.

New Line—**ILLINOIS TOOL WORKS**, Chicago, has announced a new line of standard cutting tools, to be distributed under the trade name **ILLINITE**.

District Office—**BERYLLIUM CORP.** has opened a district sales office in the Suburban Station Bldg. of the Pennsylvania R. R., 16th St & Pennsylvania Ave., Philadelphia.

Medal Awarded—**AMERICAN STANDARDS ASSN.** has given its Standards Medal for leadership in the development and application of voluntary standards this year to Frank O. Hoagland, master mechanic of Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford, Conn.

Changes Name—**Jefferies Engineering Co.**, of Westfield, N. J., has changed its name to **ENGINEERING CORP. OF AMERICA**.

World's Largest—**WESTINGHOUSE ELECTRIC CORP.** will build the world's two largest steam turbine generator units for Tennessee Valley Authority.

New Department—**CHASE BRASS & COPPER CO., INC.**, a subsidiary of Kennecott Copper Corp., is expanding research activities, and in accordance with this expansion a new Research & Development Dept. has been formed.

Company Acquired—**KEYSTONE DRILLER CO.**, Beaver Falls, Pa., has acquired Star Drilling Machine Co., Akron. Manufacture of both lines of drilling machines will be conducted at Beaver Falls under the trade name of Stardrill-Keystone Co.

Official Opening—**HARNISCHFEGER CORP.** celebrated the official opening of their new sales office, warehouse and service station in Birmingham recently, with an Open House.

First Steel Poured—**INLAND STEEL COMPANY** poured the first steel from the second of four new open-hearth furnaces it is building at its Indiana Harbor Works in East Chicago, Ind.

New Plant—**SHENANGO ALLOY TUBE CO.** opened a new plant in Sharon, Pa., recently.

Expansion—**THE MAYTAG CO.**, Newton, Iowa, has started construction of a new building which will double the facilities of the Research & Development Div.

Elected—**Harry A. Alpert**, of J. Solotken & Co. Inc., has been elected president of the Indiana chapter of the **INSTITUTE OF SCRAP IRON & STEEL INC.**

Opened—**MICHIGAN STEEL CASTING CO.** formally opened its Whitehall Precision Casting Div., recently at Whitehall, Mich.

New Plant—**H. KRAMER & CO.**, of Chicago, has opened a brass and bronze ingot smelting plant in El Segundo, Calif. It is located at 631 S. Aviation Blvd.

Exclusive—**GREAT NORTHERN CARBON & CHEMICAL CO. LTD.** of Montreal has been appointed exclusive agent in Canada for several divisions of the Great Lakes Carbon Corp.

Land Purchased—**LINDBERG ENGINEERING CO.**, Chicago, has purchased $4\frac{1}{2}$ acres of land adjoining the Southern Pacific R. R. tracks in Los Angeles, where it plans to build a plant and offices.

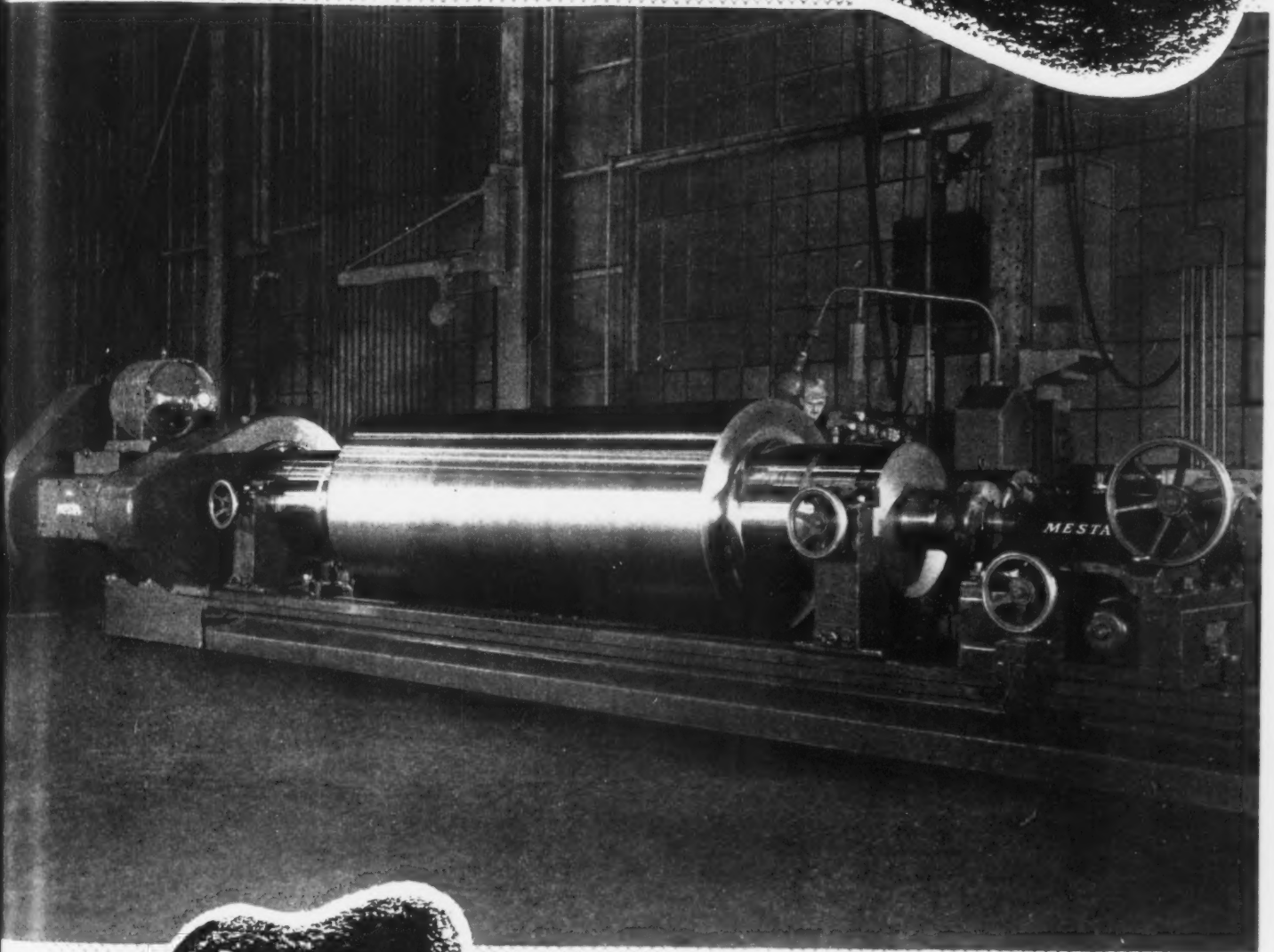
New Manufacturing Plant—**CLAUDE S. GORDON CO.**, Chicago, has opened a new manufacturing plant at Richmond, Ill.

Foreign Branch—**APPLIED RESEARCH LABORATORIES** is establishing a branch factory at Lausanne, Switzerland.

MACHINE SHOPS at **MESTA**

ROLL GRINDERS...

Finish grinding a 58"x154" MESTA
SPECIAL ALLOY CAST STEEL
BACKING-UP ROLL in a MESTA
60" HEAVY DUTY ROLL GRINDER.



Designers
and Builders
of Complete
Steel Plants

MESTA MACHINE COMPANY
Pittsburgh, Pa.

The Automotive Assembly Line

Dodge Gets Into The '53 Fight

New model challenges industry on style, engine, prices . . . Pricing puts heat on other automakers . . . Claim design, manufacturing changes made cuts possible—By R. D. Raddant.

Powered by its new "Red Ram" engine, the new Dodge rolled into the 1953 automotive wars with challenges on three separate fronts.

It has complete new styling from front to back, a new V-8 engine, and, probably most important in

involved in tooling for the new car, in developing automatic crank shaft forging, and completely mechanizing engine and other production lines.

Chief Engineer William Bogan said his engineers actually worked on the new car for more than 3



BRAND NEW: This new 1953 Dodge Coronet 4-door sedan has completely new styling. It goes on display today, Thursday. Its Red Ram engine packs an 140-hp wallop, runs on regular fuel.

the long run, it appears with generally lower price tags on eight of the ten Dodge models.

Industrywide, holding and even rolling back of the price line by Dodge has broader significance than the new car itself. Dodge people contend that engineering strides in design and production made the price possible.

It had been generally predicted, including in this column, that extensive model changes would be accompanied by moderate price increases. Now Kaiser-Frazer has announced price cuts for its 1953's, too. The heat is on the rest of the industry.

New Tooling—Dodge not only changed the new car completely; it virtually remodeled its plants to do so. Many millions were in-

years. W. C. Newberg, Dodge president, gave full credit to improved engineering design and advanced manufacturing methods for making it possible to hold the same price level.

Getting back to the car itself, it has a completely new V-8 engine, the Red Ram, a short stroke, "square" design engine. It follows the hemispherical combustion chamber trend of Chrysler and DeSoto engines. It is rated at 140 hp with a compression ratio of 7.1 to 1. Dodge will continue its 6-cylinder line with five models in each engine line.

Changes—Dodge styling changes are the most complete in the division's 38-year history. Lines are generally lower and smoother with increased glass area. Four differ-

ent types of drive are offered: Gyro-Torque, Gyro-Matic, automatic overdrive, and standard drive.

The Gyro-Torque drive employs a torque converter while the Gyro-Matic drive retains the fluid coupling. Chassis has been redesigned to improve riding and handling. Cornering has been improved by a control-arm arrangement on the front suspension.

Grille styling is much the same as on 1952 models, but beneath the hood ornament is a functional air scoop to supply cool air for the carburetor. Slits on the wheels are both ornamental and functional in assisting in cooling brake drums. Wire wheels are optional on one model.

Mr. Newberg said Dodge will produce "every car we can" and that current production schedules depend on steel availability. Every car lost because of the steel strike should be picked up by the end of the year, however.

More Power—The 200-plus-hp car will definitely hit U. S. highways with the new models. While keeping other details shrouded in secrecy, Lincoln actually encouraged a "leak" and readily confirmed that a 205-hp engine will be on its new car.

The horsepower race for a time showed signs of settling down to a reasonable situation when it appeared that one of the main contenders would settle for less. Meanwhile, a third of the higher powered cars is said to have something like 210 hp ready for 1953.

It's generally true that the sales side of the industry rather than engineering pushes the power war. Such speeds are entirely out of the question on the average highway and there are limits to acceleration. But sales people contend that the public "demand" more horses.

Most of the new V-8 engines are constructed so that increasing hp is a matter of adjustment rather than rebuilding.



COSTS SLASHED

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in the DESCALING of STEEL STRIP



LABOR

5
~~24 men~~

6,000

FLOOR SPACE

10,000 ft.

under 1%

VIRGIN METAL LOSS

~~2%~~

SCALE BREAKING

NONE

The cost of descaling hot-rolled stainless steel strip has been drastically cut at the West Leechburg plant of Allegheny Ludlum Steel Corp. Chief cost saver is the elimination of scale breaking on straight chrome grades.

In addition, five men can now operate the Wheelabrator descaling line compared to 24 men for the batch pickling operation which it replaced. It requires only about 6,000 sq. ft. of floor space against 10,500 sq. ft. for pickling. The loss of virgin metal has been eliminated and the scale removed is in an easily recoverable condition. Weight loss varies according to grade but the average is well under 1%. This compares with a

metal loss of 2% in pickling. A large reduction has been made in the amount of acid used which has helped their acid disposal problem.

The Wheelabrator is cleaning stainless steel strip in widths ranging from 9" to 37½" at speeds from 35' to 75' per minute. However, it may be applied to the cleaning of low carbon steels with equal success at any desired speed.

Savings that result from mechanical descaling of steel strip are described in bulletin 894. Send for your copy today.



WHEELABRATOR — The perfected airless centrifugal blast unit pioneered by American slashes cost and cleaning time. Conserves power, labor, space. Cleaning perfection results in longer tool life, faster machining and grinding, easier inspection.



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WORLD'S LARGEST BUILDERS OF AIRLESS BLAST CLEANING EQUIPMENT

October 23, 1952

61



Whirlpool

"TUMBLES" COST 37%

... on Clothes Dryer Burner Assembly!

How Whirlpool Corporation, St. Joseph, Mich., found Twin Type SPEED NUTS savings of 37%... reduced Materials Handling 75%

Whirlpool engineers have matched the smartly styled beauty of this automatic clothes dryer with smartly engineered, cost-saving fastening methods! In the complete dryer assembly, they have specified more than 40 SPEED NUTS of various types! Their latest find is a neat 37% production savings through the use of Twin Type SPEED NUTS in attaching the burner assembly to the base plate, eliminating two threaded nuts and two lockwashers for an amazing 75% cut in materials handling!

No matter what you build or assemble, whether

you're in the design stages or in full production, there's a SPEED NUT way to solve your fastening problems! The TINNERMAN representative in your area will quickly supply detailed information on our FREE Fastening Analysis Service for your products. Call him soon! Meantime, write for your copy of "SPEED NUT Savings Stories", a booklet showing many typical TINNERMAN cost-saving solutions to a wide variety of fastening problems in industry. TINNERMAN PRODUCTS, INC., Dept. 12, Box 6688, Cleveland 1, Ohio. In Canada: Dominion Fasteners Ltd., Hamilton. In Great Britain: Simmonds Aerocessories, Ltd., Treforest, Wales. In France: Aerocessoires Simmonds, S. A. — 7 rue Henri Barbusse, Levallois (Seine) France.

OLD METHOD ... 2 bolts, 2 nuts, and 2 lockwashers required costly handling of separate parts plus the use of hand wrenches to attach Burner to dryer base plate.

The SPEED NUT WAY ... 1 Twin Type SPEED NUT replaces the 2 nuts, and 2 lockwashers, eliminates the use of hand wrenches.

TINNERMAN Speed Nuts®
*Trade Mark Reg. U. S. Pat. Off.
FASTEST THING IN FASTENINGS®

IGNITION:

New cars get more battery power. Some will get 12-volt batteries.

Under the hoods of some of the new cars will be 12-volt batteries replacing the conventional 6-v unit that has supplied the electrical current in U. S. autos for so many years.

The 12-v battery is really a monument to two features of the new cars: Increasing number of mechanical gadgets powered by electric motors and the climbing compression ratio of the new engines.

The 12-v system has not met with unanimous approval. Some of the largest cars will still rely on 6-v and their engineers contend it is adequate. On the other hand, one division will employ the 12-v system universally and another will use it on one line.

Probably high compression is the biggest single factor behind the 12-v system. Reason is that as the compression increases, voltage required to fire the spark plug increases. It is significant that the new car with the highest compression ratio will use the larger battery exclusively.

Copper Saving—A third benefit of the 12-v system is a substantial saving of copper. Anyone who took a high school physics course remembers, although it may require a little refreshing, that the higher the voltage the smaller the wire required to conduct the current. Some estimates of copper savings go as high as 30 pct.

Upping the voltage isn't as simple as installing a new battery. The entire electrical system must be revised. A different generator is required, different lamps are needed, new motors must be employed, and greater insulation is necessary.

Inevitable result is increased cost of the electrical system, estimated by some as about 25 pct. In many of the units smaller wire is used but the requirement of finer wire in more elaborate coils raises their price. The car radio

Automotive Production (U. S. and Canada Combined)			
WEEK ENDING	CARS	TRUCKS	TOTAL
Oct. 18, 1952	108,458*	31,793*	140,251*
Oct. 11, 1952	106,021	32,014	120,810
Oct. 20, 1951	94,030	26,780	138,035
Oct. 13, 1951	95,119	25,424	120,543
*Estimated			

Source: Ward's Reports

will need minor changes including a more expensive tube with somewhat shorter life.

Benefits are improved starting, particularly in cold weather, increased engine efficiency through greatly improved combustion, and greater power for electrical accessories.

The 12-v battery will probably never be universal. Smaller cars with fewer electrical loads and lower compression will not require the added voltage. Others think the 6-v system can be improved to handle even the higher requirements that new cars will bring in future years.

Steel Stays Short in Detroit

A sizeable tonnage of ingots offered on the market from the Ford steel mill last week caused some speculation that steel had caught up with consumption there.

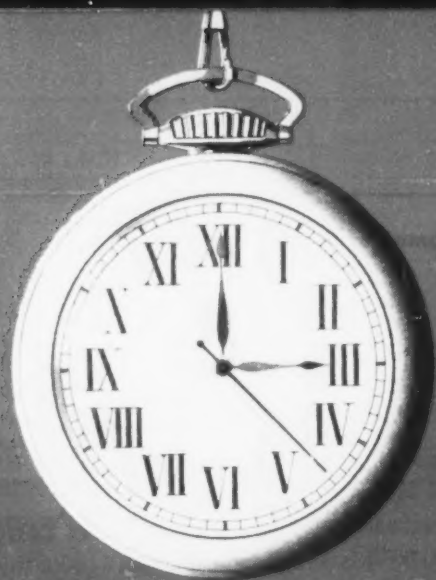
A closer check, however, showed that Ford is still in the same boat as the rest of the industry in terms of steel supply. The ingots, while not defective, were just not suitable.

Steel continues to be the prime headache in Detroit with no easy way out for a number of months. Tickets are as big a problem as deliveries although conversion "bonuses" are helping out.

THE BULL OF THE WOODS

By J. R. Williams





by the hour...

and by the ton

Heppenstall

back-up roll Sleeves

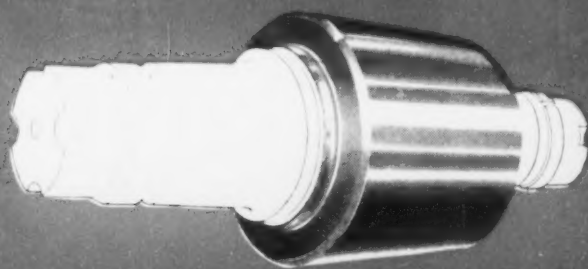
make good production sense

Heppenstall Sleeves for Back-Up Rolls keep the mill line running longer because they're built to last. They mean less down-time—increased productivity—lower overall costs. Their records of performance make good production sense. They show increases in productivity of from 61% to 128% in terms of roll service, which are typical of the benefits in time and cost savings—increases in production.

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steel and "custom-built" . . . normalized, annealed, heat treated, and tempered to exact specifications. The results: correct hardness . . . maximum density . . . perfect fit . . . durable surfaces . . . resistance to cracking and spalling in high speed service.

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October

This Week in Washington

Will Crisis Extend Aluminum Controls?

DPA talks about aluminum controls stretching through third quarter '53 . . . Drought cuts aluminum output . . . Defense contracts overseas . . . Jets have good kill ratio—By G. H. Baker.

New authority for extension of controls over aluminum is to be sought on a "crisis" basis soon after the new Congress convenes. Defense Production Administration is now talking about a control stretch-out extending through third-quarter 1953. Present statutory authority for controls expires on June 30.

Reason for this trimming of earlier government optimism over aluminum supplies is the current drought. The water shortage is now in its third month with no immediate signs of relief. DPA officials say the shortage is the "worst in the history of the industry." Drought has hung over the Pacific Northwest area since early September.

Drastic Losses—Current aluminum losses in Pacific Northwest aluminum output amount to 1 million lb per day. Total that probably will be lost by the three largest producers in that area is around 120 million lb. In Tennessee and North Carolina—areas where the weather also has been extremely dry—lost Alcoa production is estimated at about 8.5 million lb each month.

Just what cutbacks in allocations will have to be made by National Production Authority as a result of this tough run of luck has not yet been determined. But the lack of steel needed to complete reduction plants that the government thought would be producing by the end of this year is going to necessitate some cutbacks.

Power Rationing—Despite the severe shortage of hydro-electric power, the government probably

will not move to ration electric power in the Pacific Northwest for at least another 2 weeks. It is possible that no curbs at all will be ordered this year.

But Washington power experts view the shortage as "most serious," and hint that some kind of power-rationing program will have to be put into effect.

Overseas Spending—Upcoming contracts for military weapons to be placed with Western European industry next year are to concentrate on three basic and standardized types: U. S. 155-mm howitzer, British 50-ton Centurion tank, and French 81-mm mortar.

Final agreement on this phase of arms standardization has been agreed upon informally among North Atlantic Treaty Organization nations. Next step is the letting of contracts for these three weapons to armament plants in NATO countries—particularly in England, France, and in Western Germany.



Standard Warplanes — As for standardization of aircraft, the joint defense chiefs are practically agreed upon adoption of the British Swifts and Venoms, and of the French Mystere IV planes. And U. S. plane designs, now being tested in Korea, are to be added to the arms-makers' list of standardized weapons.

Inclusion of the new U. S. "atomic cannon" in NATO's standardized shopping list appears to be only a remote possibility. U. S. military officials admit that atomic ammunition is now being produced for use in "testing" purposes only.

There are apparently no present plans for mass production of so-called "atomic ammunitions." Army says it now has "several" of the new atomic guns. This is believed to include the three guns undergoing field tests prior to being turned over to military units in the field.

Good "Kill Ratio"—Superiority of U. S. aircraft engineering in the F-86 Sabrejet is holding what the Air Force calls the "kill ratio" at a 9-1 level, or better.

In air-to-air combat over Korea, the Sabrejets have maintained this record since August, and in recent weeks are showing signs of improving this upperhand position.

Who's Flying Them — Impressive engineering and operating record being scored is being achieved in the face of heavy enemy opposition. U. S. Air Force officials disclose that the Chinese Communist Air Force now numbers nearly 2500 planes.

About half this number are jets—mostly MIG-15s. Nearly all of these are Soviet-built, and there is good reason, the Pentagon reasons, to believe that they are piloted by "other than North Korean or Chinese Communists."

Reports have reached the U. S. that Russians are piloting and repairing jets.



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The potentials of the Microhoning process can best be judged by the past accomplishments and present policy of the organization that developed it.

To give industry a complete service, the Micromatic Hone Corporation has an organization and sales policy unique in the machine-tool business. One well-coordinated organization sells, engineers, builds, and services the complete installation. Micromatic assumes full responsibility for all the equipment and the results obtained with the Microhoning process.



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POWER: Getting Juice for Atom Plants

AEC contracts for electric power to run our atomic plants . . . 15 power companies sign up in Ohio . . . Annual cost of power for Ohio plant will be \$60 million—By R. M. Stroupe.

Power for the plants that will supply the U. S. with atomic products is being rounded up by Atomic Energy Commission.

In Ohio, where a giant "gaseous diffusion" facility will be built in Pike County, 15 power companies have signed up to provide electric power needed in the production of U-235. To the south and west five companies grouped as Electric Energy, Inc. (EEI) have contracted with AEC to furnish an additional 235,000 kw for the U-235 plant under construction near Paducah, Ky.

Two Steam Plants—The larger combination of private companies, called the Ohio Valley Electric Corp., will undertake to build two steam generating plants with a total power potential of 2,200,000 kw. This will supply the Pike County facility with 1,800,000 kw. Coal consumption by the steam plants is expected to be about 7.5 million tons per year.

AEC estimates the annual cost of power for its Ohio plant when full operations are in progress some 4 years hence at \$60 million. This bill will be based on fixed charges and costs of the power plants, operating expenses, and fuel.

Technically, the agreement between AEC and Ohio Valley Electric Corp. may run only to next Aug. 1, because the agency has no authority now to contract for necessary cancellation charges. Next year, however, AEC will ask Congress for such authority and seek to continue the contract for 25 years. At the discretion of the agency, it can be extended for a longer period.

Power Charges—Total power requirement at the Paducah plant is 1,940,000 kw, which includes 500,000 kw that EEI originally agreed

to furnish and the added 235,000 kw the group is scheduled to provide. Tennessee Valley Authority will supply 1,205,000 kw, of which 705,000 kw represents a commitment to meet the increased AEC demand.

When the Paducah plant is operating full blast, power charges are expected to be about \$23.1 million from EEI and \$37 million from TVA each year.

Included in the computation of EEI charges will be the cost of expanding a 4-unit steam generating plant at Joppa, Ill., to a 6-unit plant. This facility, according to current estimates, will burn about 3 million tons of coal annually.

Additional Authority—Limitations that apply to the AEC agreement with the Ohio Valley group are applicable to the contract with EEI, but AEC expects Congress to make available additional authority to contract for cancellation charges.

Companies included in the Ohio Valley Electric Corp. include Appalachian Electric Power, Cincinnati Gas and Electric, Columbus and Southern Ohio Electric, Dayton Power and Light, Indiana & Michigan Electric, Kentucky Util-

ities, Louisville Gas and Electric, Monongahela Power, Ohio Edison, Ohio Power, Pennsylvania Power, Potomac Edison, Southern Indiana Gas and Electric, Toledo Edison, and West Penn Power.

In the EEI group are Central Illinois Public Service, Illinois Power, Kentucky Utilities—also found in the preceding group, Middle South Utilities, Inc., and Union Electric of Missouri.

Beryl Purchase Program Set Up

General Services Administration has set up a program under which it will buy beryl from small domestic producers at the rate of \$400 a ton.

Jess Larson, GSA head, says the three mica depots at Spruce Pine, N. C.; Custer, S. Dak.; and Franklin, N. H., will be authorized to accept up to 25 tons a year from individual producers.

Cut-off date for the program is June 30, 1955, or when a total of 1500 short dry tons of ore has been purchased.

The flat rate of 20¢ per lb, or \$400 a ton, is for ore accepted on the basis of visual inspection. Price to be paid for analyzed ore (analysis cost to be paid by the producer) will range from \$40 per unit (20 lb) for 8 pct contained beryllium to \$50 per unit for 10 pct or more content.

Purpose of the buying program, Mr. Larson said, is to help develop new domestic sources since about 90 pct of American beryllium requirements must now be imported.

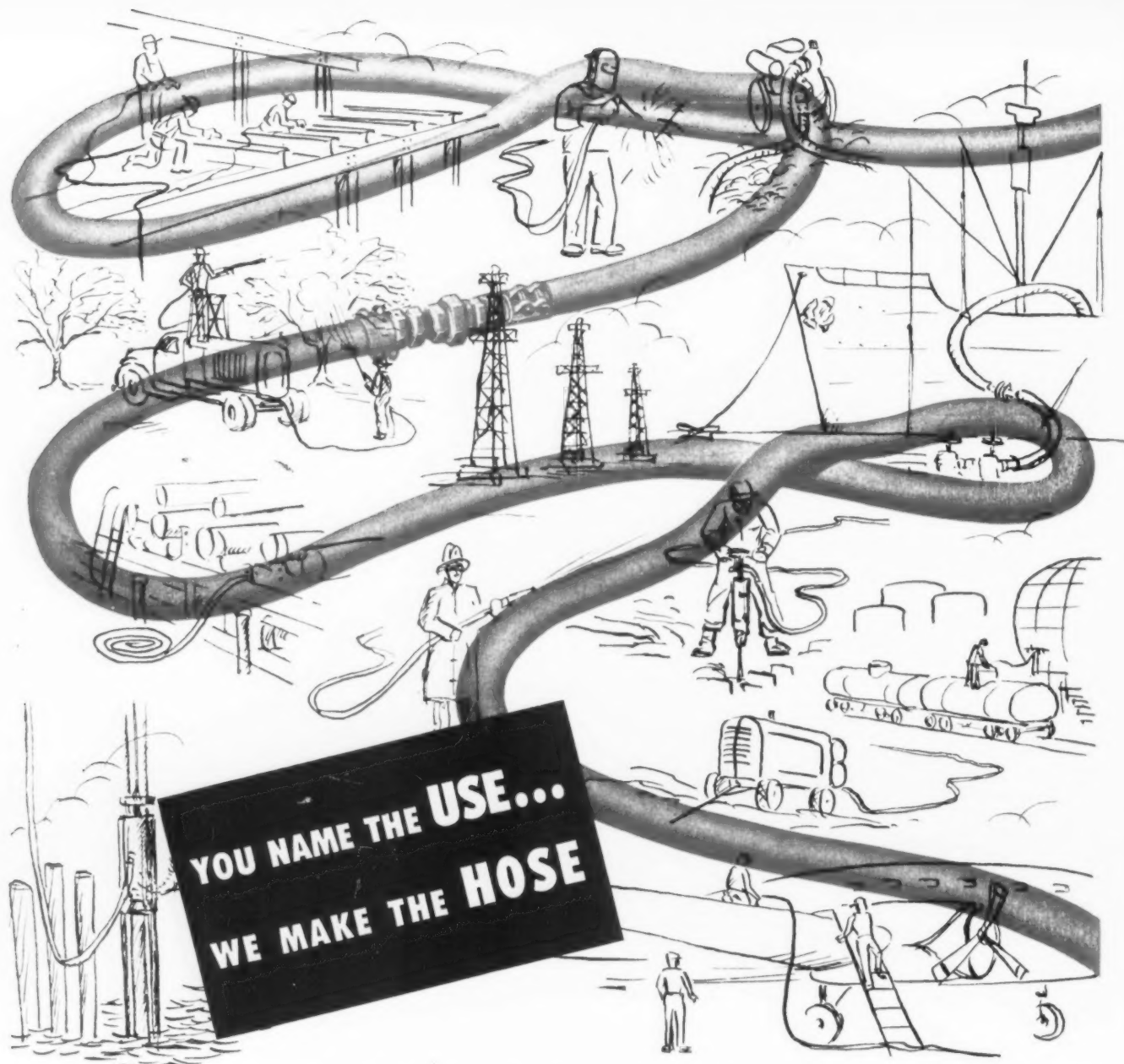
Army Wears Chrome-Cobalt Teeth

Savings of about \$500,000 a year are being recorded by the Army through substitution of a chrome-cobalt alloy for gold in manufacture of partial dentures and dental replacements.

The alloy, says the Army Dental Corps, is sturdier, lighter, more durable, and considerably cheaper than gold. It is also easier to clean and makes for better oral hygiene.

Chrome-cobalt is being used in partial dentures and replacements at five of the Army's central dental laboratories in the U. S.





Our Condor Homoflex Hose is an example . . . Raybestos-Manhattan engineers found a way to build strength into a hose-wall without simply adding weight and thickness in more plies. The result, this Hose is flexible as a rope . . . and a real labor saver wherever men must constantly work with hose. On the other hand, Raybestos-Manhattan makes the world's *largest and heaviest* hose for oil drilling and loading, and for suction • Hose may not be your problem today, but whenever you think of industrial rubber products . . . transmission, conveyor, V-belts, or hose . . . remember R/M engineers have developed exclusive features to give you more for your money in every use. Consult your R/M representative.



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West Coast Report

New Line Will Ease Oil Well Strain

New pipeline from Wink, Tex., to Los Angeles will deliver 300,000 bbl of crude per day . . . But California will still be short of oil . . . Washington line planned—By T. M. Rohan.

Overstrained oil wells in California, No. 2 U. S. producer, are scheduled to get a big lift from Texas next year. But the state will still be short of the black gold.

Monthly production currently is still far under existing refinery capacity. Next year's big lift will come from a \$100-million, 1000-mi, 300,000-bbl daily ultimate capacity line from Wink, Tex., to Los Angeles. Final contracts for 195,000 tons of 24- and 26-in. pipe were let this week by Ebasco Services, Inc., a New York consulting engineering firm acting as agents for West Coast Pipeline Co., also New York. Of the total, Kaiser got 88,000 tons, Consolidated Western Div., U. S. Steel, 78,000, and A. O. Smith of Milwaukee 30,000 tons. Some pipe is scheduled for delivery in late 1952 and final completion is set for next year.

In another pipeline move last week Standard of California announced its Salt Lake Pipe Co. subsidiary will put in a 12,000-bbl daily capacity products line from Pasco, Wash., to Spokane. This 140-mi, \$4.5-million line will require 8000 tons of 8-in. pipe for which the contract has not been let. Only right-of-way clearances and pipe delivery commitments are delaying construction. Full operation is scheduled for mid-1953.

Shell Molder—Solar Aircraft Co. at San Diego belatedly announced last week it has been shell molding since 1948 (on a production basis since 1951), making it, temporarily at least, first in the West.

Metals being cast are Inconel, Hastelloy C, N-155, Haynes 36 and many Type 300 and 400 series stainless steels. Foundry capacity

is 3000 castings daily ranging in size from 1 oz to 350 lb. Parts cast are support bosses and brackets, exhaust system selector valves, spider gears, support elbows and aircraft hinge yokes.

Disclosure of the Solar operation followed announcement in THE IRON AGE of shell molding machines at Stanford University and Vallejo (Calif.) Brass & Aluminum Co.

New Plane Shop—A new \$500,000 airplane engine overhaul shop will be built and put in operation in 15 months at the San Francisco airport, Pan American Airways announced last week. The complete engine tear-down and inspection work was previously done at Pacific Airmotive in Burbank. The airport also houses United Airlines' maintenance shop employing 5000 workers and a smaller Western Airlines shop besides several small operations.



Aluminum Pipe—More aluminum overhead irrigation pipe for the 1-million acre irrigable Columbia River basin, soon to be opened to farming, will be available next year when a new Yoder continuous welding aluminum pipe mill at Kaiser Aluminum's Spokane, Wash., plant goes in operation. Kaiser this week got a \$1.7-million tax writeoff for 50 pct of a contemplated addition to the present mill currently being put in.

Only current producers of aluminum piping in the 2- to 8-in. dia sizes used are Alcoa at Vernon, Calif., and Lafayette, Ind.; Reynolds at Phoenix; Bohn Aluminum and Brass at Adrian, Ohio, and Harvey Aluminum at Los Angeles. Some steel pipe is still being sold by Atlas and Chicago Metals but is at a considerable disadvantage due to its 3 to 1 weight ratio over aluminum. Steel is popular, however, for strongly alkaline water applications.

Now-it-can-be-told—Transporters for the Army's huge new atomic gun have been in production at the Kenworth Motor Truck Corp., Seattle, since May of this year. The firm was responsible for all design and development on the 750-hp vehicle—a job that took about 2 years.

The transporters can move the 50-ton cannon at 35 mph. This means it can be put in action faster than any other heavy artillery. Total weight of the gun and transporter is 85 tons, length 84 ft.

It consists of two independently powered and steered units, which pick up and carry the atomic rifle between them. Each unit has an operator's cab, capable of holding three members of the gun crew, is powered by a six-cylinder air-cooled gas engine that develops 375 hp. Power steering is provided.

M.T.

When Does a Band Saw Become a Machine Tool?

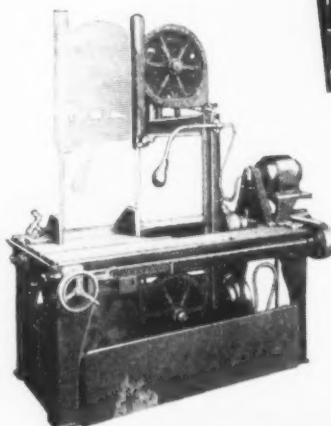
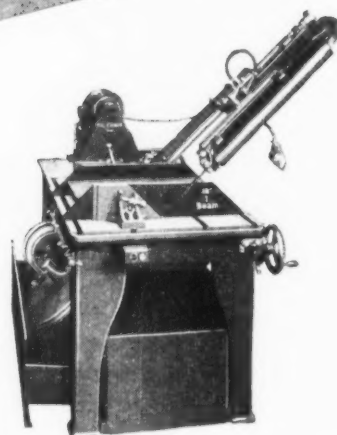
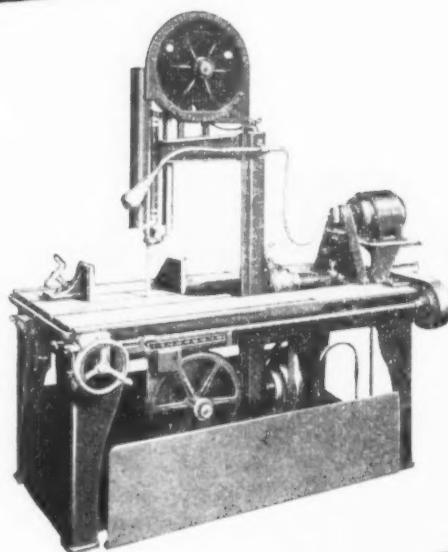
There are basic requirements of accuracy and proficiency that separate a "machine tool" from other power tools . . . characteristics such as those which distinguish a tool maker's screw-cutting, precision lathe from the woodworking lathes used in grade school manual training classes. Among metal-cutting band saws, only the MARVEL No. 8 Series Band Saws can qualify as machine tools, for only MARVEL Band Saws have the following capabilities and features:

- 1 Angular cutting from 0° to 45° right or left without moving the work. Built-in protractor.
- 2 Vertical blade power-fed into material—permits re-entrant cuts, notching, mitering, keyway sawing, etc.
- 3 Automatic power or manual feeds at the flick of a finger.
- 4 Feed pressure adjustable even when machine is running. Indicated in actual pounds of pressure.
- 5 Work clamped to table of machine. Working area more than 835 square inches.
- 6 Tee-slotted table facilitating clamping down of odd and irregular shaped pieces; easily supports heavy work or large and long structural shapes. Standard vise chucks work on either side of blades.
- 7 Automatic blade tensioning device. Every blade at uniform tension regardless of operator efficiency.
- 8 Adjustable upper guide roller holder insuring minimum section of unsupported blade on all sizes of material. Quick acting.
- 9 Built-in coolant system with delivery at blade entry point. Pump driven without belt or gears.
- 10 Replaceable vise ratchet and table wear strips of tool steel. New saw performance at all times.
- 11 LARGE CAPACITY. Standard: 19½" x 18½". High column: 25½" x 18½". Handles 99% of all work.

Before buying any metal-cutting band saw, be sure to see the versatile MARVEL No. 8. Your local MARVEL Field Engineer will demonstrate its significant "machine tool" characteristics and their application to your work, with costs, savings, cutting speeds and methods. This technical service is provided, without obligation, in the interests of better metal sawing.

If you prefer to "study it out for yourself," write for the MARVEL C-49 Catalog.

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Machine Tool High Spots

Government Policy Losing Markets

Foreign competition getting tougher . . . European market getting out of reach . . . Foreign builders after as much business as possible . . . Government aids them—By E. C. Beaudet.

Visitors returning from the machine tool shows at Hanover and Olympia were on the whole visibly impressed with the progress made by European machine tool builders since the war. Feeling was almost universal that the foreign market would never return to the level it formerly occupied.

While there was an absence of any revolutionary principles or design, foreign builders are said to be making greater use of tracer controls, particularly on turning machines. Some visitors claim there was a noticeable improvement in the quality of iron used and a trend toward heavier sections.

Particularly impressive to some was the greater eye appeal of foreign makes and the much finer finished employed. For the most part European tools are underpowered to meet the demands of the American mass market.

Tough Market—Some feel technological improvements and low cost of European tools will prevent American machine tools from regaining their position. Demand will still exist for mass market tools not obtainable in Europe, but standard, general purpose equipment will be traveling a rocky road.

Greatest factor working against the American product, it's said, is cost. Labor rates are around one quarter those in the U. S. Iron on the Continent is 25 pct below U. S. iron. In England it is about one half. Lower costs, together with the great increase in European capacity, present great odds working against our recovery of the European market. In Germany, for instance, machine tool capacity is now greater than that during the height of World War II.

Little Threat—Few visitors to the fairs, however, view this great expansion in capacity and progress in design as a serious threat to our domestic market. At present foreign machine tools are being bought in this country. Whether they will be able to be sold when business becomes more competitive is debatable.

Lack of sufficient power will be one drawback. Import duties and ocean freight are added to their cost. To get any firm foothold in America extensive organizations must be set up in this country to service these tools. It is questionable whether foreign builders will want to risk the capital needed to form these organizations to buck American tools in their own backyard.

It is apparent that the great comeback staged by European builders, with the help of Marshall Plan aid, will permit them to go after a greater share of the world machine tool market. The alarming thing about this is that while Europeans are after as much of

this market as they can get, the policy of our government is to share our market with others.

Solves Problem—Monarch Machine Tool Co., Sidney, O., last week held a community open house to celebrate the completion of its expansion and modernization program. Attendance over the weekend was expected to come to 15,000 persons.

One of the most impressive parts of the modernization program was the development of a new production plan. During the company's steady growth, the problems of production, assembly, inspection and test became more complex. Greater difficulty was encountered in coordinating the flow of parts and units, since machine tools had been grouped by types and functions, such as a separate milling department, separate turning dept., etc.

Refer Back—In modernizing the plant, the thoughts of planning executives turned to earlier days to see what features of a smaller operation were advantageous and how they could be applied to a larger one. This resolved itself into a production plan whereby machines are brought to the work instead of the work to the machines.

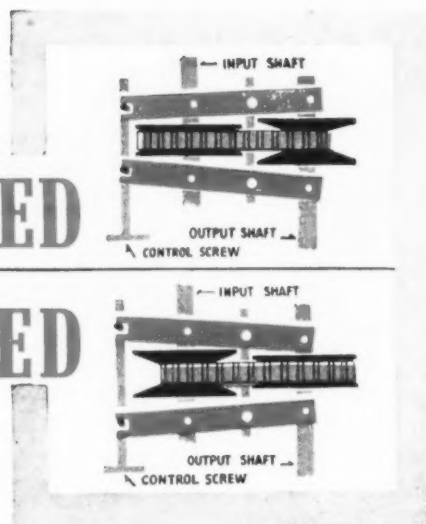
Lathe production has been divided into several parts. Each part represents a complete operation with single responsibility for production and inspection of a single type of component such as headstocks, tailstocks, aprons, beds, etc. This departmentalization has resulted in a manufacturing process that is basically straight line, and has greatly aided flow of production through the plant.

In the new layout, a quality control center is located nearby the departments which will use it. This completely enclosed space includes a chemistry laboratory, metallurgical department, gear control area, experimental heat treating facilities and a dark room.



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in an infinite number
of positive settings!



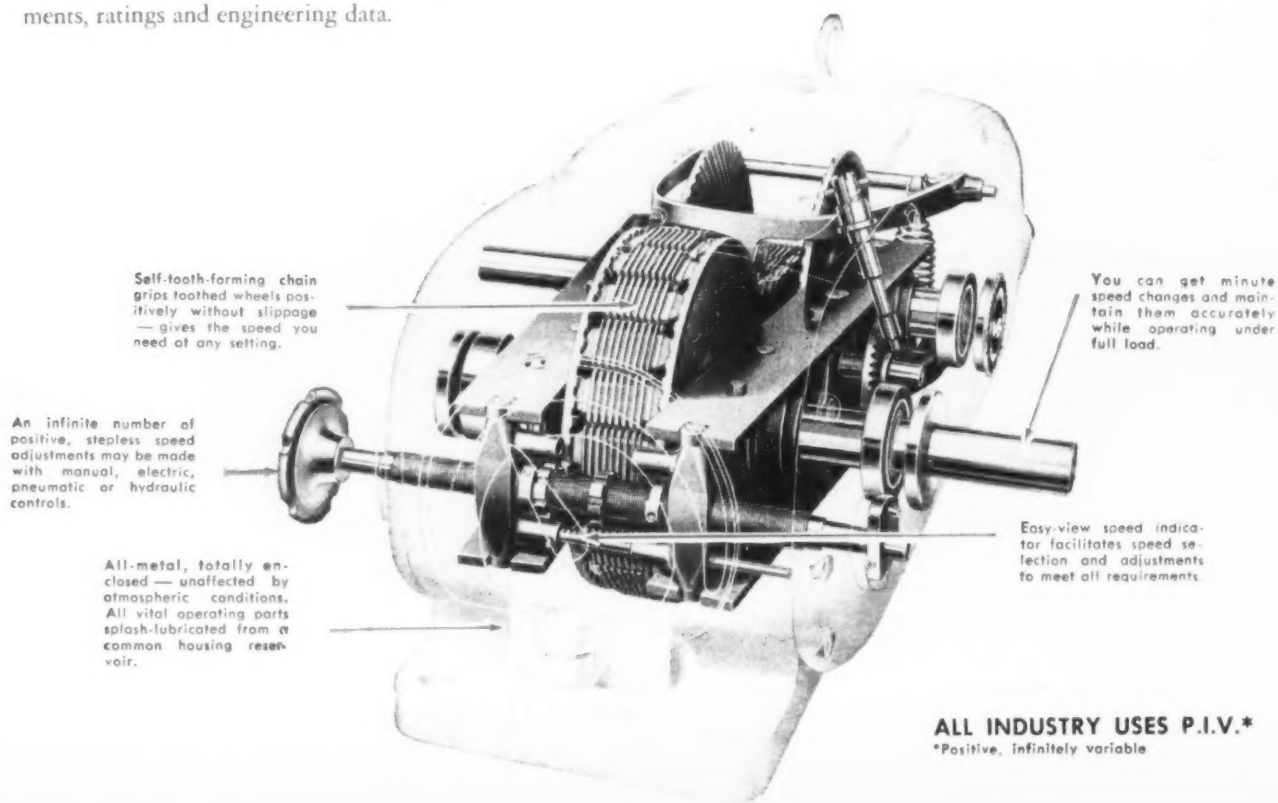
The operation of Link-Belt's P.I.V. Variable Speed Drive is not dependent upon friction for power transmission. Link-Belt's P.I.V. gives you exact speed selection in *positive*, infinitely variable settings . . . transmits full rated horsepower throughout its complete range.

Find out how Link-Belt's P.I.V. can increase the flexibility and efficiency of your machines. Call the branch office near you. Pre-selection of the right P.I.V. variable speed transmission for your needs can be readily obtained together with complete detailed information concerning arrangements, ratings and engineering data.

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Gold Mining Has Lost Its Glitter

It's a losing proposition . . . Output drop seen for last half of 1952 . . . Several producers shutting down . . . Second flash melting furnace for copper at Inco plant—By F. Sanderson.

Gold mining in Canada is a losing proposition. Soaring labor and production costs and high taxes are killing the industry. During the past few weeks several formerly profitable producers have closed down or are in process of cleaning up for shut down.

For the first 7 months this year gold production showed little change from the corresponding period of 1951. It was 2,532,008 oz this year and 2,533,453 oz in 1951. But a general cut for the last half of 1952 is indicated.

Inadequate Bonus—The prevailing gold price in Canada is just around \$33.60 per fine oz against better than \$35 a year ago. The gold price here is subject to change with fluctuations in the Canadian dollar against its U. S. counterpart. In the face of softening gold prices, the Canadian government does pay a bonus to producers on a cost-per-oz basis. This is not sufficient to offset the high production costs.

Prospectors have abandoned the search for gold in favor of base metals and strategic minerals and metals. Many established producers of the yellow metal are coming to the end of their activities unless they can get a higher price, or in some way lower costs.

Shutdowns—An ill-omen for the gold mining industry is the suspension of all operations by the Negus Mines in the Yellowknife area. This follows salvage work carried out during the past few months. Also last week, Chester-Ville Mines in the Larder Lake section of Ontario started work directed toward a complete shut-down. The mill is still running on

a clean-up basis but this should be completed early next month.

Then, activities will stop and mill and equipment will be sold.

Still others have announced intentions of suspension, including Buffalo Ankerite Gold Mines, a producer in the Porcupine area and Newlund Gold Mines, a development operation in Northwestern Ontario.

Flash Smelting—At the Copper Cliff plant of International Nickel Co., flash smelting has proved so satisfactory that a second furnace is to be set up to handle all copper concentrates. While there were some difficulties to be overcome, they have been operational rather than structural. They are gradually being worked out.

Flash smelting has proved to be all that was expected. Company officials believe an important advancement has been made in recovery of metals from Sudbury ores. In the new process oxygen replaces powdered coal and the

change already has resulted in a big saving in smelter fuel costs.

How It Works — Previously, Inco's practice has been to roast copper concentrates and send the sinter to reverberatory furnaces to be made into blister copper for electrolytic refining. Flash smelting reduces this procedure. It is carried on in an oxygen-rich atmosphere and the product can be sent direct to the refinery.

Because of the oxygen-rich atmosphere, flash smelting produces a high concentration of sulfur dioxide gases, well suitable for making liquid sulfur dioxide as a byproduct. Canadian Industries Ltd., now is completing a plant planned to recover 95,000 tons a year.

Lead Dip—For the second time in 2 successive weeks, Consolidated Mining & Smelting Co. of Canada Ltd., announced a reduction of 1¢ per lb in its lead price. New price is 13.6¢ per lb.

73 Diesels—The Canadian Pacific Railway Co., has placed orders totalling \$15 million for 73 diesel locomotives. The diesels, for use on Western Canada lines, are to be delivered next summer.

Duty Rebate—The federal government will grant a 100 pct duty rebate on construction machinery, equipment and materials imported for the development of the Quebec-Labrador iron ore deposits. The duty rebate also applies to the building and equipping of the railroad from the iron deposits to the St. Lawrence. It is understood that a large part of the equipment will be obtained in the United States.

Until now, no rebate claims have been made, but when they are, they will be honored within the limits set by the Cabinet, and the limits are said to take in anything that goes into actual development work, construction equipment, etc.



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Monadnock Building San Francisco 5, Calif.	1578 Union Commerce Bldg. Cleveland, Ohio	7251 General Motors Bldg. Detroit, Michigan	

FREE publications

These publications describe money-saving equipment and services... they are free with no obligation... just circle the number and mail the postcard.

Batch furnaces

Standard batch furnaces for case-hardening steel are the subject of a new bulletin just released by Surface Combustion Corp. Controlled atmosphere equipment, including muffle furnaces and generators plus salt bath, pot furnaces and direct-fired oven furnaces, are shown and described. Information is also given on typical gas carburizing, liquid carburizing and cyaniding and pack carburizing applications. *Surface Combustion Corp.*

For free copy circle No. 1 on postcard.

Tin can cleaner

Canners and brewers know how important it is to have clean, dry cans to prevent rusting, increase product appeal and make labels stick. Chain Belt Co. has answered all these needs with its Rex Roto-Brush Can Cleaner and Drier. This machine sprays, scrubs and dries practically all types of cylindrical cans and operates at a speed of up to 300 cans per min. More information on this practical unit is contained in a new folder. *Chain Belt Co.*

For free copy circle No. 2 on postcard.

Thermocouples

Richards thermocouples and parts, outlined in a new brochure, provide closer temperature control, reduce maintenance and cut operating costs. The thermocouples have been designed for use with all types of pyrometers. Also described in the publication are protecting tubes, thermocouple wires, lead wires and insulators. *Arklay S. Richards Co., Inc.*

For free copy circle No. 3 on postcard.

Titanium

Uses, production and properties of titanium are all covered in an interesting new folder available from Mallory-Sharon Titanium Corp. Included in the titanium property table in the booklet are facts on ultimate tensile strength, modulus of elasticity, fatigue strength and bend characteristic for five types of titanium alloys. *Mallory-Sharon Titanium Corp.*

For free copy circle No. 4 on postcard.

Insulation

Primarily for electric repair shop operators but of value to anyone concerned with the economical performance of electric motors is a new leaflet put out by Dow Corning Corp. Described in detail is Class H insulation, made up of mica, fibrous glass and similar inorganic materials, plus semi-inorganic silicon compounds in rubber or resinous forms. *Dow Corning Corp.*

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Free Publications

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Steel tools

Uses of Kennametal cemented tungsten carbide are discussed in a new booklet. Engineered for the steel industry, Kennametal has tools for machining jobs, roughing and finishing tools for plunge feed and longitudinal feed lathes, tools for trepanning, contour finishing, profiling and units for many other operations in steel mills, maintenance shops, roll shops and wheel and axle works. *Kennametal, Inc.*

For free copy circle No. 6 on postcard.

Table accessories

Many accessories for use with Raymond Corp.'s Hydraulic Elevating Tables are described in a supplementary bulletin now available. Among the equipment listed are towing handles, two-speed foot pumps, retaining bars, roller tops and die separators. *Raymond Corp.*

For free copy circle No. 7 on postcard.

Testing

A new type of testing machine having an electric weighing system is outlined in a circular available from Baldwin-Lima-Hamilton Corp. Capacity of the testing machine is 50,000 lb and it can be used for static, dynamic, impact and torsion testing. Specifications of this multi-purpose testing unit are included. *Baldwin-Lima-Hamilton Corp.*

For free copy circle No. 8 on postcard.

Compressors

American Blower single-stage centrifugal compressors are basically variable-volume, constant pressure blowers. They deliver large quantities of pulsation-free air or gases and, since no internal lubrication is required, the air or gas is free from contamination. A new bulletin is available giving complete details on these units. *American Blower Corp.*

For free copy circle No. 9 on postcard.

Shovels, truck cranes

A new catalog has been issued describing Gar Wood Model 75A and 75B Shovels and 75BT truck cranes. All these units have fluid coupling to cushion shock and an exclusive right-angle gear drive which eliminates adjustments. The 75's can hoist, swing and travel simultaneously. Capacity of the shovels is $\frac{3}{4}$ yd while the truck crane is rated at 20 tons. *Gar Wood Industries.*

For free copy circle No. 10 on postcard.

Electric furnaces

The Electric Furnace in the Iron Foundry gives complete cost data to point up the economy of electric furnaces. Data contained in the report helps plant operators decide whether to use an electric furnace as a prime melter or as a duplexer. Twelve tables give estimated costs on 8, 16 and 24-hr operation for electrical energy, labor, refractories, maintenance, electrodes, depreciation and interest. *Whiting Corp.*

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THE IRON AGE

Post Office Box 77
Village Station
NEW YORK 14, N. Y.

Files

Data on a complete line of American Pattern Files for industrial use is contained in a new folder. Included among the many files illustrated and described in the folder are pitsaw, tapered, pillar and warding files. Information is also given on special purpose files for non-ferrous metals. *DoAll Co.*

For free copy circle No. 12 on postcard.

Grinding wheels

Simonds internal grinding wheels are fast cutting, cool grinding and provide the kind of finish required. Despite their small size they last long enough to maintain wheel size during the grinding cycle. Included in a new bulletin describing these grinding wheels are grain and grade recommendations for internal grinding of various materials and tables of standard sizes and shapes up to 2½-in. diam. *Simonds Abrasive Co.*

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RUST-OLEUM®

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Beautifies As It Protects!
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Cut maintenance costs. Apply RUST-OLEUM directly over rusted surfaces without removing all the rust! Just wirebrush and use sharp scrapers to remove rust scale and loose particles, then apply by brush, dip, or spray. Costly sandblasting and chemical precleaning are not usually required. Specify RUST-OLEUM for every rustable metal surface. Prompt delivery from Industrial Distributors in principal cities.

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Facilities include gray iron and alloy foundries, machine shops, with boring mills, automatic and turret lathes, drill presses, screw machines, broaches, milling machines, surface grinders, external grinders, etc. Structural departments for shearing, rolling, punching, forming, gas-cutting, welding and assembly. In all, two modern equipped plants, twenty-five (25) acres.



FOR ENGINEERING AND CONSTRUCTION COMPANIES — Alten now produces refinery and industrial furnaces, alloy industrial furnace castings, burners, heat exchangers, welded steel fabrications delivered to job sites.



FOR MACHINERY MANUFACTURERS — Alten builds machine bases, oil pans, pump and compressor parts, hydraulic components and many other machinery parts.



FOR BUILDERS OF EARTH MOVING EQUIPMENT — Alten makes clutch housings, clutch drums, drum spools, brake drums, wheels, transmission cases, etc.

A complete list of production possibilities is almost inexhaustable. Send your inquiries and prints.

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Since 1889

Centrally
Located In
The Heart of
Industrial
America

Write
Today for
Booklet
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Free Publications

Continued

Grinders

Gardner single-spindle grinders are general purpose machines designed to meet a wide variety of industrial needs. Made in two models, Series 5 is for light flat-surface grinding operations. It is available in one size with 15, 18 or 20-in. discs. Series 200 has been designed for an extensive range of general flat surface jobs. It comes in three sizes, using discs ranging from 15 to 40-in. in diam. More information is available in a new folder. *Gardner Machine Co.*

For free copy circle No. 14 on postcard, p. 75.

Scales

An 8-p. booklet describes the direct-reading, single-pan Gram-atic Balance which eliminates all handling of weights and gives readings in 20 sec. Designed primarily for laboratory and research work the scale comes in three models with capacities of 200 g, 100 g and 20 g. Since weights are removed, not added, beam load and sensitivity is always constant. *Fisher Scientific Co.*

For free copy circle No. 15 on postcard, p. 75.

Locknuts

Flexlocs are one-piece, all-metal stop nuts as well as locknuts. They have slotted tops or locking sections divided into six equal segments. These segments are closed in to make the inside diam smaller than that of the companion bolt. When used, the flexible segments are expanded by the bolt. After wrenching, the spring tension of the segments locks the nut securely at any desired position on the bolts without galling threads. A complete listing of the types of Flexlocs available is contained in a new catalog. *Standard Pressed Steel Co.*

For free copy circle No. 16 on postcard, p. 75.

Fork trucks

Yale & Towne's 6000-lb capacity gasoline and diesel fork trucks are covered in a new specification circular. Excellent driver visibility, higher stacking and faster lifting speeds are features of these fork trucks. *Yale & Towne Mfg. Co.*

For free copy circle No. 17 on postcard, p. 75.

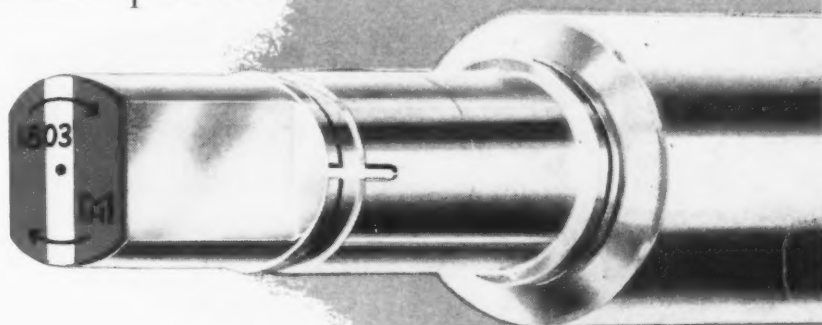


to modern hot strip rolling...

MACK-HEMP ROLLS *with the striped red wabblers*

do a consistent job for the skilled hot strip mill operators who use them, because Mack-Hemp's engineers coordinate their roll research and development program with the demands of the mill operators.

As a result of this progressive policy, Mack-Hemp rolls *with the striped red wabblers* give a plus value to mill operations.



Because Mack-Hemp is always working to make each roll better than the one before—because Mack-Hemp keeps up with the latest developments in rolling mill practice, it's a good idea to keep your eye on what's new and different at Mack-Hemp.



MACKINTOSH-HEMPHILL

COMPANY

Makers of the Rolls with the Striped Red Wabblers
PITTSBURGH AND MIDLAND, PA.

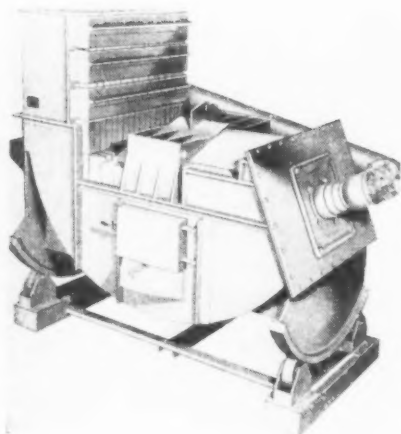
MACKINTOSH-HEMPHILL PRODUCTS INCLUDE:
rolls . . . steel and special alloy castings . . . completely
integrated strip mills . . . heavy duty engine lathes . . .
Mackintosh-Hemphill rotary straighteners . . . improved
Johnston patented corrugated cinder pots and slag-handling
equipment . . . shape straighteners . . . end-thrust bearings
. . . shears . . . levellers

*Look for the Mack-Hemp
Rotary Straightener at the
A. Milne & Co. Exhibit,
Metal Show
Philadelphia,
week of October 20, 1952*

October 23, 1952

NEW equipment

New and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 75 or 76.

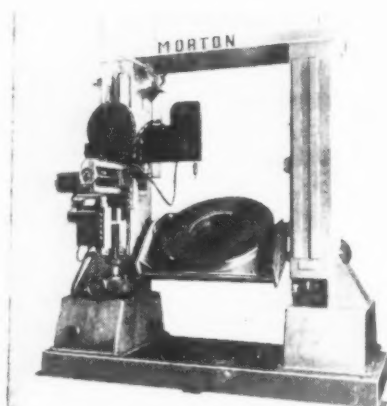


New furnace offers advances in metal melting

Operating improvements for melting ferrous and nonferrous metals are provided by a new non-crucible, direct-fired reverberatory furnace. Through its continuous-charge, continuous-pour operations, quality castings are said to be secured at a high production rate, and at less cost. No time is lost between pouring and recharging. Hot metal is always available for casting. Combustion normally wasted is used for melting or preheating cold metal in

the hopper. This hopper has a restricted opening at the bottom to prevent cold metal from contacting molten metal. Since the metal is melted quickly, there is little chance for it to absorb gases. The furnace can be used for large or small heats. Fired by oil or gas fuels, it can be built to meet specified requirements. Bath capacities of standard metals range from 300 to 400 lb. *Eclipse Fuel Engineering Co.*

For more data circle No. 18 on postcard, p. 76.

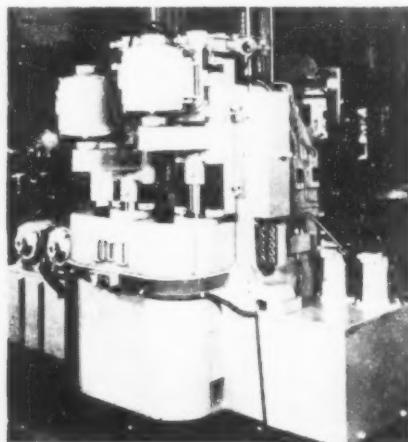


Welder has tilting table with rotation speeds

Universal girth welding machine offers a tilting table with variable rotation speeds. Columns supporting the table support the overhead platform for mounting power source and allied equipment. Machined slides are furnished on the four column surfaces for mounting multiple welding equipment. Vertical operation of the saddle is manual or power driven under operator control. Table drive passes

through two speed, lever operated, disk clutch gear case. Both normal welding speeds and rapid traverse for positioning are possible. The machine has 50-in. vertical saddle adjustment, 11 in. horizontal cross-rail adjustment, 24 in. head mounting block adjustment, 300° of table tilt with a 20:1 table rotation ratio. Table will carry a maximum load of 10 tons. *Morton Mfg. Co.*

For more data circle No. 19 on postcard, p. 76.



Operator convenience with increased production

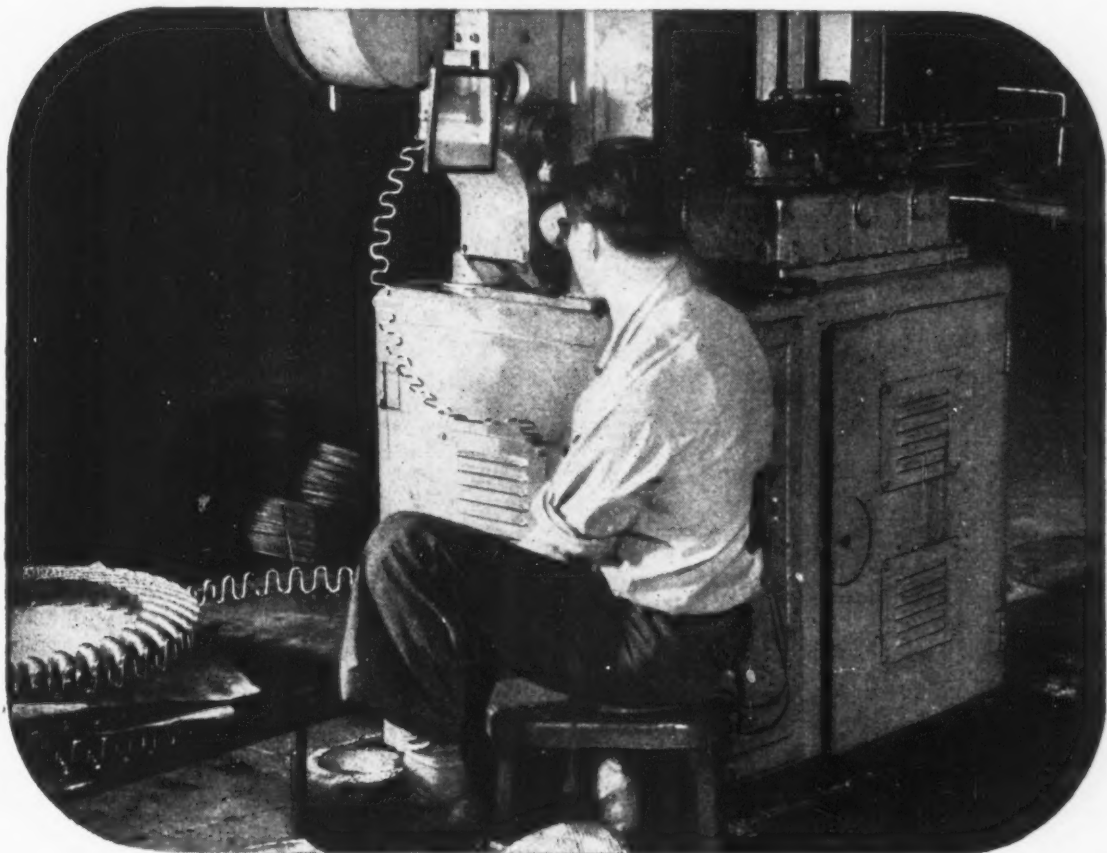
A new dual spindle vertical grinder has individual operated spindles with individual controls which are not interlocked, and self-centering centrifugal chucks. These features permit an easy, natural, rhythmic operation almost continuous in nature without undue attention or fatigue. On production work the left hand spindle may be in operation while the right hand spindle head is retracted for unloading and loading. Work is set in the

chuck of the non-operating unit and as the table begins to revolve, the centrifugal force causes the jaws to grip the work firmly throughout the grinding cycle. When the table stops at the end of the cycle the jaws automatically open and the operator lifts out the finished piece to replace it with unfinished work. Control buttons and switches are duplicated for each unit. *Springfield Machine Tool Co.*

For more data circle No. 20 on postcard, p. 76.

Turn Page

SPRING WIRE



**For uniform quality, we're sure this spring wire
is the best we've ever made**

ROEBLING is about the largest specialty wire manufacturer in America. And with progressively improved facilities and more positive controls we are constantly turning out wires with a higher uniformity of gauge, finish and mechanical properties.

Among these products that save preparation time and boost production for users are mechanical spring wires including hard drawn, soft, annealed

or oil-tempered M.B., H.B. and Extra H.B.; music wire; upholsterers' spring wire and valve spring wire...all in a full range of physical properties and finishes.

Reduce your machine shut-downs and step up overall production with the Roebbling specialty wire that will meet your most exacting requirements. John A. Roebbling's Sons Company, Trenton 2, N. J.

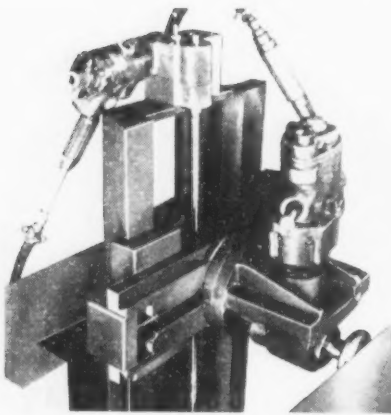
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OFFICE, TRENTON 2, N. J.



New Equipment

Continued

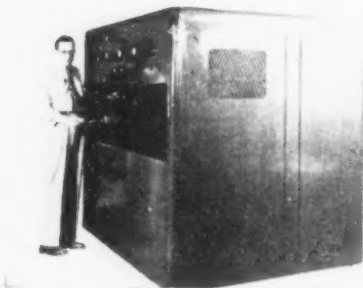


Portable mill refinishes rolling mill columns

This portable milling machine consists of a bed with fitted ways and feed gear box with three speeds; a feed-across slide with dovetailed ways and a feed change gear housing, making possible a horizontal and vertical feed; and the circular slide on which the working head bracket is mounted. The head bracket can be rotated 210°. The working head, precision fitted to the working head slide, can be ro-

tated 200°. The spindle driven by an air motor through bevel gears is mounted on Timken roller bearings. Nose has an 8 pitch 1½ in. diam standard thread and a No. 3 Morse taper. Tools used can be end mills, slab mills or fly cutters. It is possible to refinish surfaces at 90° angles from each other with one setting of the machine. *Atlas Portable Machine Sales Corp.*

For more data circle No. 21 on postcard, p. 75.

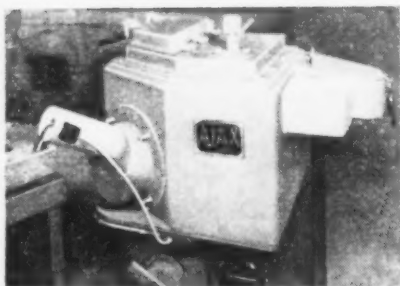


Induction heating unit provides 50 kw

Added to the Lindberg line of high frequency induction heating units is a model built to provide 50 kw at 400,000 cycles per sec on a 100 pct duty cycle. The units are recommended for heating and fabricating operations which call for production brazing, soldering, hardening,

forging or shrink fitting at reduced cost and floor space requirements. The new unit features a built-in closed water system that circulates temperature controlled water to the oscillator tube and tank coils. *Lindberg Engineering Co.*

For more data circle No. 22 on postcard, p. 75.

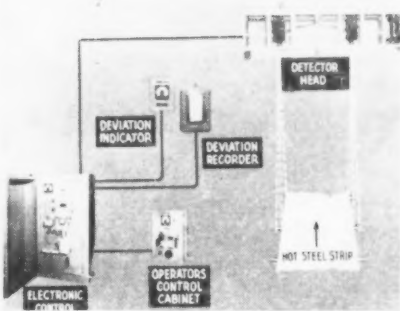


Automatic unit pours molten metal into molds

The Ajaxomatic is designed to discharge molten metal, in particular aluminum, directly into the cold chamber of most available diecasting machines. Molten metal is taken from a point well below the surface of the melt, eliminating any chance for pouring surface

oxides or scum into the casting. The unit acts as a combined holding furnace and automatic pouring unit, it is not a melting furnace. Temperature and alloy composition of the melt are maintained accurately. *Ajax Engineering Corp.*

For more data circle No. 23 on postcard, p. 75.

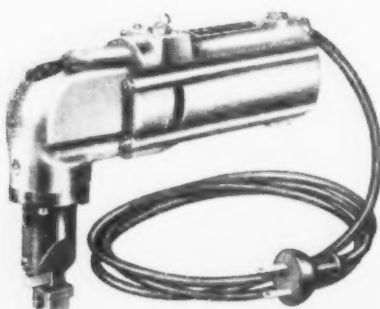


Gage measures width of hot strip steel

New non-contacting device continuously and automatically measures the width of hot strip steel to an accuracy of $\pm 1/8$ in. It consists of a detector head, an operator's cabinet, and an electronic cabinet. Two phototube scanners located in the detector head mounted 15 ft above the hot strip steel, pick up

the light radiated from the strip and convert it into electrical signals. The resulting signals are two pulsating square-waves. These are amplified, added together, and balanced against a standard voltage so that the difference produces a signal proportional to the width deviation. *General Electric Co.*

For more data circle No. 24 on postcard, p. 75.



Portable nibbler cuts 14 gage stainless steel

A portable nibbler will cut through 14 gage stainless steel, C.R. steel, galvanized iron, and softer materials in proportion without distortion on either side. The Little Wonder also cuts holes in tubes and ducts without damaging in any way the original contour. The nibbler is said to be accurate, can be

used as a hand tool or easily mounted for bench operation. Minimum cutting radius is $7/8$ in. It is housed in an aluminum casting, weighs only 7½ lb. It is 10 in. long, equipped with universal motor, 8-ft cord. *Fenway Machine Sales Co.*

For more data circle No. 25 on postcard, p. 75.
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Machine

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N AGE

made right —
to make good
on the job

SPHEROIDIZED

Annealed, soft and ductile — ideal
for cold forming operations.

PEARLITIC

Temper-rolled in controlled hard-
ness and strength for blanking.

WEIRTON

HIGH-CARBON STRIP

COLD-ROLLED SPRING STEEL

There is a Weirton cold-rolled spring steel that is just right for forming . . . and another exactly right for blanking. Whichever you use, you will find that it makes the operation easier, and meets the requirements for many products in which high fatigue resistance is essential.

Weirton High-Carbon Strip possesses, to an unusual degree, these highly desirable properties and qualities: Accurate response to heat treatment. • Uniformity of gauge and width. • Uniform chemical and physical properties. • Exact constancy of grain structure. • Controlled decarburization limits.

Weirton High-Carbon Strip is obtainable with the desired chemical analysis and for specific heat treating and hardness ranges, in widths up to seven inches.



WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION



NONE BETTER... America's First and Safest

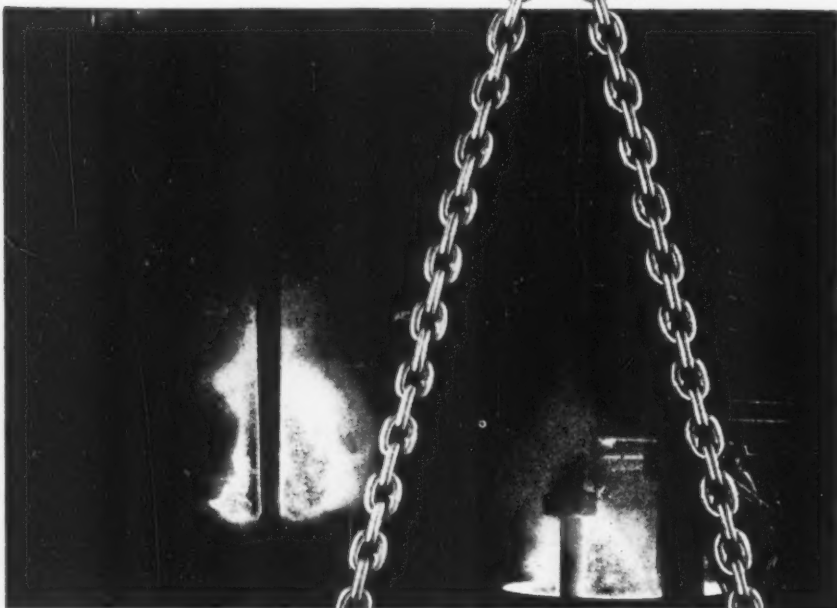
HERC-ALLOY

SLING CHAINS

STRENGTH—Size for size, no other sling chain offers a greater tensile strength. HERC-ALLOY will not crystallize—never requires annealing.

SAFETY—HERC-ALLOY Sling Chains are made to your specifications. Every new sling carries a written guarantee, is registered and tested before shipping. This registration serial number is carried at the top link.

● Serial number permanently affixed near top link for positive identification.



● Identify HERC-ALLOY by the patented inswell side weld with the extra swell of metal on the inside of the link.



EFFICIENCY—Lighter, stronger HERC-ALLOY Sling Chains feature the exclusive short, narrow link design which holds firmer, less tendency to kink, less gouging. Workmen handle HERC-ALLOY with less effort.

PREFERENCE—Men who buy and use sling chains are influenced only by facts learned through experience. HERC-ALLOY Sling Chain preference has been built up over the years, not just by what we say, but by how HERC-ALLOY performs on the job.

Write for Data Book No. 3 which contains much useful manufacturing and application information on HERC-ALLOY Sling Chains.

COLUMBUS McKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corp.)

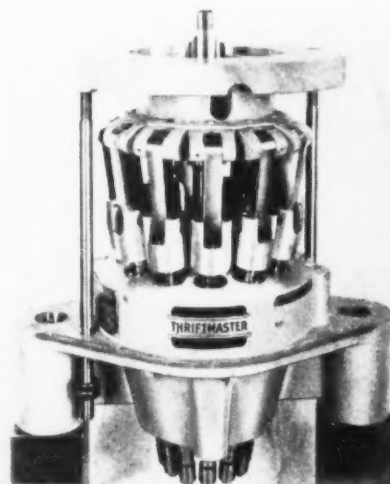
GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

District Offices: New York • Chicago • Cleveland

Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., and Johannesburg, South Africa.

New Equipment

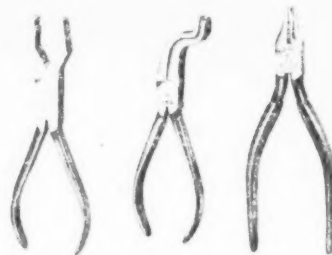
Continued



Fixed center drillhead

Twelve $\frac{1}{4}$ in. holes set at 10° angles and located on the flat surface near the periphery of a steel part can be drilled with a new 12-spindle fixed center drillhead. The part, a trap in a 3.5 in. high explosive anti-tank rocket, is drilled to a size tolerance of 0.001 in. in a single pass under power feed of 0.004 ipr at approximately 1000 rpm. The fixed center drillhead has a 1:3 gear ratio. Spindles feed drills in at angles through linkage with drill press non-rotating round quill while gear train and housing remain stationary. *Thriftmaster Products Corp.*

For more data circle No. 26 on postcard, p. 75.



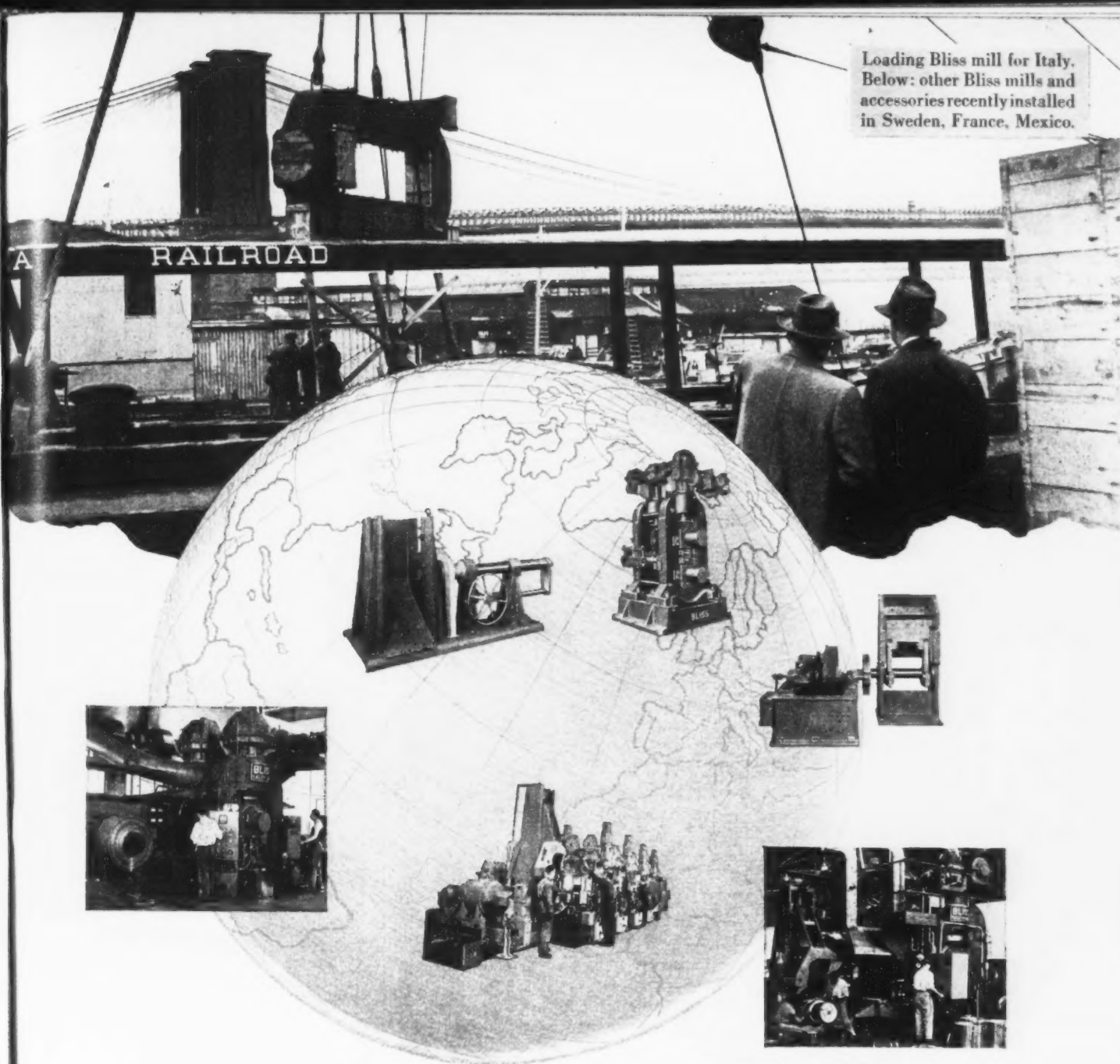
Custom pliers

Custom pliers simplify special situations, solve the difficult, and speed the slow-moving. Pliers illustrated on the left is designed to accommodate a special fitting; middle pair is for reaching around an assembly obstacle; pliers at right joins two strips of light metal together without rivet, staple or fastener. *Utica Drop Forge & Tool Corp.*

For more data circle No. 27 on postcard, p. 75.

Turn Page

Loading Bliss mill for Italy.
Below: other Bliss mills and
accessories recently installed
in Sweden, France, Mexico.



The Free World Rolls on **BLISS** Mills

Bliss four-high cold-reducing mills to Italy...Bliss hot-strip mill auxiliary equipment to Brazil...Bliss mandrel-type hot coiler to Sweden...Bliss four-high aluminum mill to Mexico...Bliss reversing hot-strip mill to France...

And so it goes. More and more of the free world's metal-processing plants are calling on Bliss for the same modern, precision rolling mill equipment that has performed so well in the leading steel, brass and aluminum plants of the United States.

Bliss is proud of its ever-growing part in increasing production of metals so vital to the security of the free world. We welcome the opportunity to supply still more metal-rolling equipment.

Bliss builds a *complete* line of rolling mills and accessories to suit your hot or cold rolling needs. You're likely to find just the right mill or accessory to increase plant production and efficiency in the colorful, 52-page Bliss brochure. Write for it today.

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Branch offices in Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Rochester, Toledo; and Toronto, Canada. West Coast Representatives: Moore Machinery Company, Los Angeles and San Francisco; Star Machinery Company, Seattle. Other dealers in United States cities and throughout the world.

Bliss' rolling mill engineer in Paris provides a complete engineering consultative service for European metal producers.

Remember: for Presses, ROLLING MILLS, Special Machinery...

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for zinc,
cadmium, aluminum
and cuprous
metals

provide
corrosion resistance
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appearance

And they are easy to
apply! Just a simple chemical dip
for only a few seconds produces the coating

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combine to make Iridite the most economical chromate finish you can buy. Many Iridite chemicals are packed in powder form, thus can be shipped to you in steel pails at freight savings of up to 75%! Pails take less storage space, are easier to handle, eliminate carboys, need not be returned.

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Iridite is approved under government specifications.

ALLIED RESEARCH PRODUCTS
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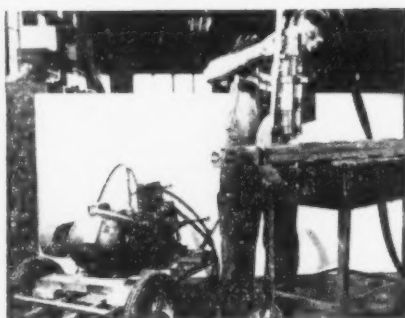
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD.



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for Corrosion Protection and Paint Systems on Non-Ferrous Metals; ARP Plating Brighteners.
West Coast Licensees: A. M. BUTCHER COMPANY

New Equipment

Continued



Portable riveter

New portable riveting unit is operated by means of a manual control hydraulic valve. Operator merely depresses hand lever on riveting head to produce riveting action. When full pressure (adjustable to 30 tons) is reached, valve automatically provides ram retraction. Release of valve will retract ram at any point in riveting cycle. Model has capacity of 4½ x 1½ in. rivets. *Manco Mfg. Co.*

For more data circle No. 28 on postcard, p. 75.



High-strength alloy

A transformer terminal eyebolt, made of new high-strength and non-corrosive alloy, Stenitor, is shown being tightened by a workman. Composed of copper, nickel, silicon, and a small amount of iron, the alloy is not susceptible to stress corrosion or season cracking when clamped to any tension within the ultimate strength of the material. When made by sand casting, the alloy has a tensile strength of 90,000 psi and a yield strength of 70,000 lb.; by hot forging it has a tensile strength of 107,000 psi and a yield strength of 83,000 lb. Stenitor was developed by GE in co-operation with Revere Copper & Brass, Inc. *General Electric Co.*

For more data circle No. 29 on postcard, p. 75.

Turn to Page 89



FROM THE TOP STEEL PRODUCER . . .
TO A LEADING CHEMICAL HOUSE,
A YEAST COMPANY
AND A MEAT PACKER . . .

Heat Prover

SERVES **62** DIFFERENT COMPANIES
IN THE GREAT CHICAGO INDUSTRIAL AREA!

The Cities Service Heat Prover is graphically proving its worth to all kinds of industry in the Chicago area and elsewhere throughout the country.

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Sales Agent: CHARLES H. STAMM

10 North Main Street • West Hartford 7, Conn.
Hartford 32-4448

—New Equipment—

Continued

Rip-proof belt

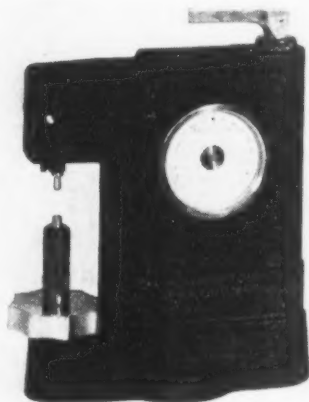
New conveyer belt that is virtually rip-proof is for use where conveyer belts may be subject to severe ripping or tearing action by foreign objects, such as in coal mining and handling, quarry work, and mining metallic ores. Feature of the belts is the special carcass which has multiple strands of high tensile steel wires imbedded at 3-ft intervals. In rare instances where a foreign object punctures the belt, tearing is limited to a maximum of about 3 ft lengthwise. *N. Y. Belt-ing & Packing Co.*

For more data circle No. 30 on postcard, p. 75.

Pocket magnifier

Inexpensive 10-power magnifier can be clipped to the pocket like a fountain pen. It uses two penlight batteries and bulb for illuminating the object, is designed for on-the-job inspection of small parts, castings, small joints and welds, reading micrometer scales. Weighs 2½ oz, including batteries. Lens system is the Bausch & Lomb Coddington. *Bausch & Lomb Optical Co.*

For more data circle No. 31 on postcard, p. 75.

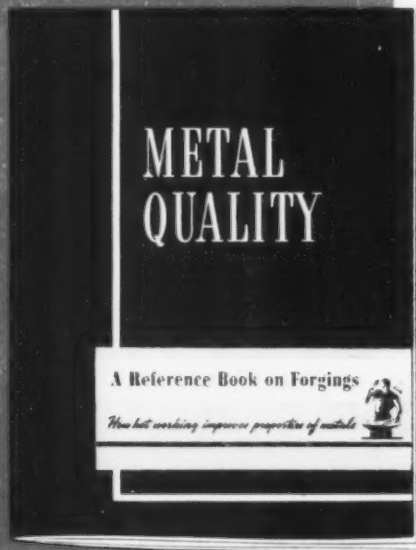


Hardness tester

This 3-in. capacity hardness tester has several improved features: addition of the A and D scales to the already C-B and E scales, enabling the operator to test very thin sheet steel. Visional means for setting the instrument to the different load factors for different scales used, prevents mistakes in setting the machine. *J. P. Newman Co.*

For more data circle No. 32 on postcard, p. 75.

Turn Page



Engineering, production and economic advantages obtainable with forgings are presented in this Reference Book on Forgings. Write for a copy.

Forgings offer unlimited possibilities for solving Problem Parts Problems without creating other problems for other people. Check all the aspects of a problem part with the unrivaled economic and mechanical advantages of closed die forgings, and the closed die forging process for producing parts, and you will discover the possibilities for solving a problem part with closed die forgings. Then, consult a Forging Engineer about the correct combination of mechanical properties which closed die forgings can provide for your product.

DROP FORGING ASSOCIATION

605 HANNA BLDG. • CLEVELAND 15, OHIO

Please send 60-page booklet entitled "Metal Quality—How Hot Working Improves Properties of Metal", 1949 Edition.

Name

Position

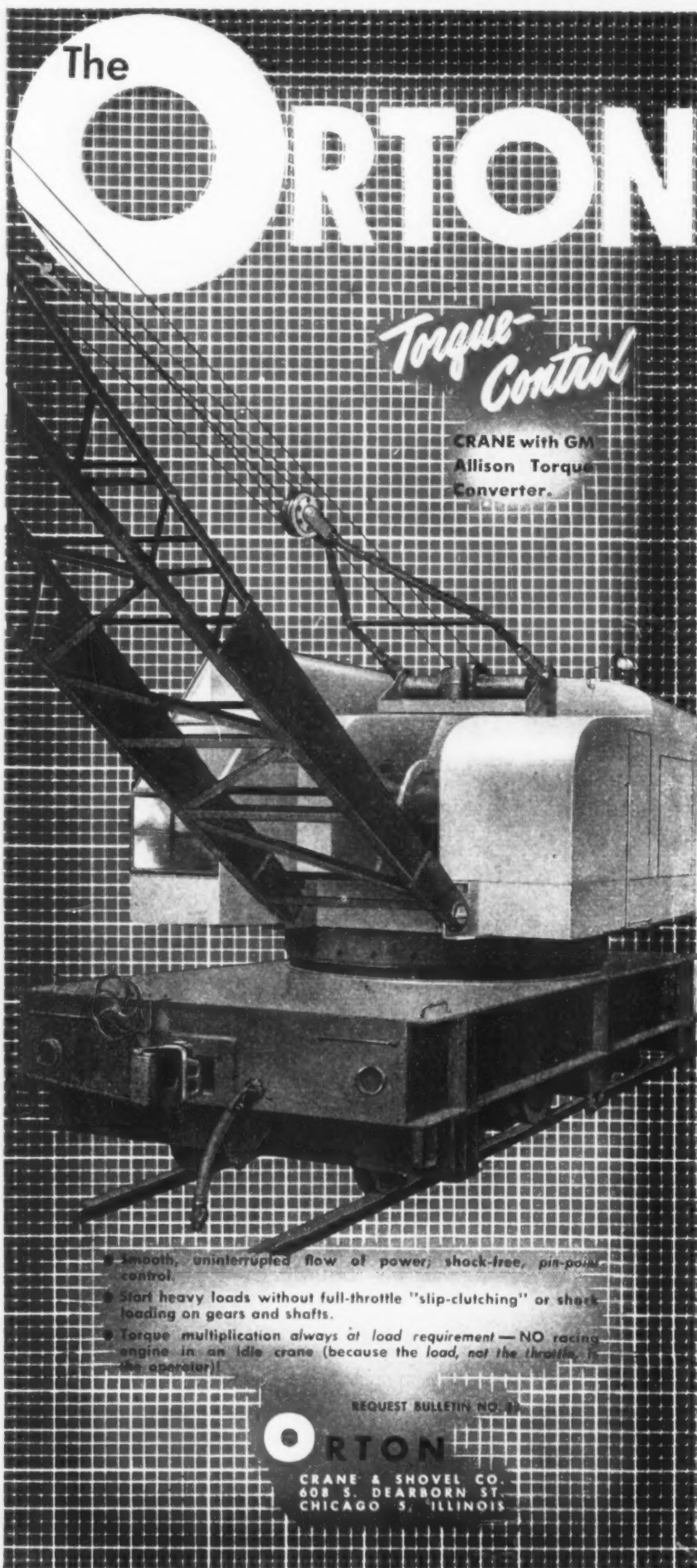
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Torque-Control

CRANE with GM Allison Torque Converter.



- Smooth, uninterrupted flow of power; shock-free, pin-point control.
- Start heavy loads without full-throttle "slip-clutching" or shock loading on gears and shafts.
- Torque multiplication always at load requirement—NO racing engine in an idle crane (because the load, not the throttle, is the operator).

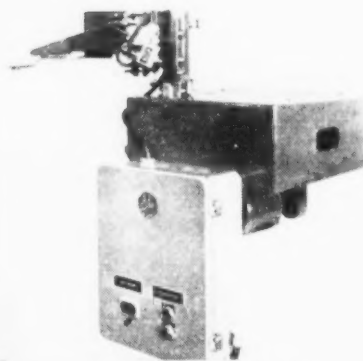
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ORTON

CRANE & SHOVEL CO.
608 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

New Equipment

Continued



Punch press feeder

The Feed-O-Matic F-3 is a redesigned version of the mechanical punch press feeder. It broadens the application of the unit in secondary die work and permits its use for parts transfer operations not connected with punch presses. The operator places the part into a nest, and a transfer arm picks the part out and places it into the die. Pick-up can be timed to coincide with the completion of a production operation or with the arrival of the part at a predetermined location. The unit will provide vacuum pick-up for flat parts, vacuum controlled grip fingers for pieces that have different planes and in special applications a magnetic pickup. *V & O Press Co.*

For more data circle No. 33 on postcard, p. 75.

Space-scale

Combination slide rule and scale with no moving parts measures areas from scale drawings at a glance; can be used on any fractional inch scale drawing. Measures circles and cylinders as easily as rectangles and cubes. It is made of 5x5 in. transparent vinylite, printed in two colors, and laminated. *New-Era Products.*

For more data circle No. 34 on postcard, p. 75.

Hard steel drills

Range of standard sizes of Super Hard carbide drills designed for drilling hardened steel now includes 11 sizes carried in stock: $\frac{1}{8}$ to $\frac{1}{2}$ in. in standard round shank style (solid carbide end) and 10 sizes: $\frac{5}{16}$ to $\frac{3}{4}$ in. in hex shank (carbide tipped) style. *Super Tool Co.*

For more data circle No. 35 on postcard, p. 75.

Auto prepaint cleaner

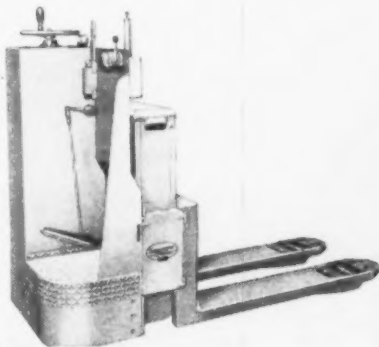
New auto body precleaning technique removes the silicon polish film from the surface before spray painting is applied in an auto paint shop. After "Gunking" the entire car, solvent sanding may be resorted to without fear of re-deposit of silicon film or imbedding or grinding silicon into the paint or metal surfaces because of the emulsifying suspending action of the Gunk solvent. Final step is to rinse the car body freely by sluicing with a water hose. Tarlene, a dry solvent, is recommended for the small shop where water hosing is not possible. *Curran Corp.*

For more data circle No. 36 on postcard, p. 75.

Flop-over conveyer

A time-saving 90° conveyer curve requires no adjustments when direction is changed. Designed expressly for filling or emptying freight cars, the mobile conveyer curve provides great flexibility and completely eliminates all setup time. It consists of a half section pivoting on the center 45° axis. Wheels on the section enable it to function when flipped in either direction. *Wilkie Co.*

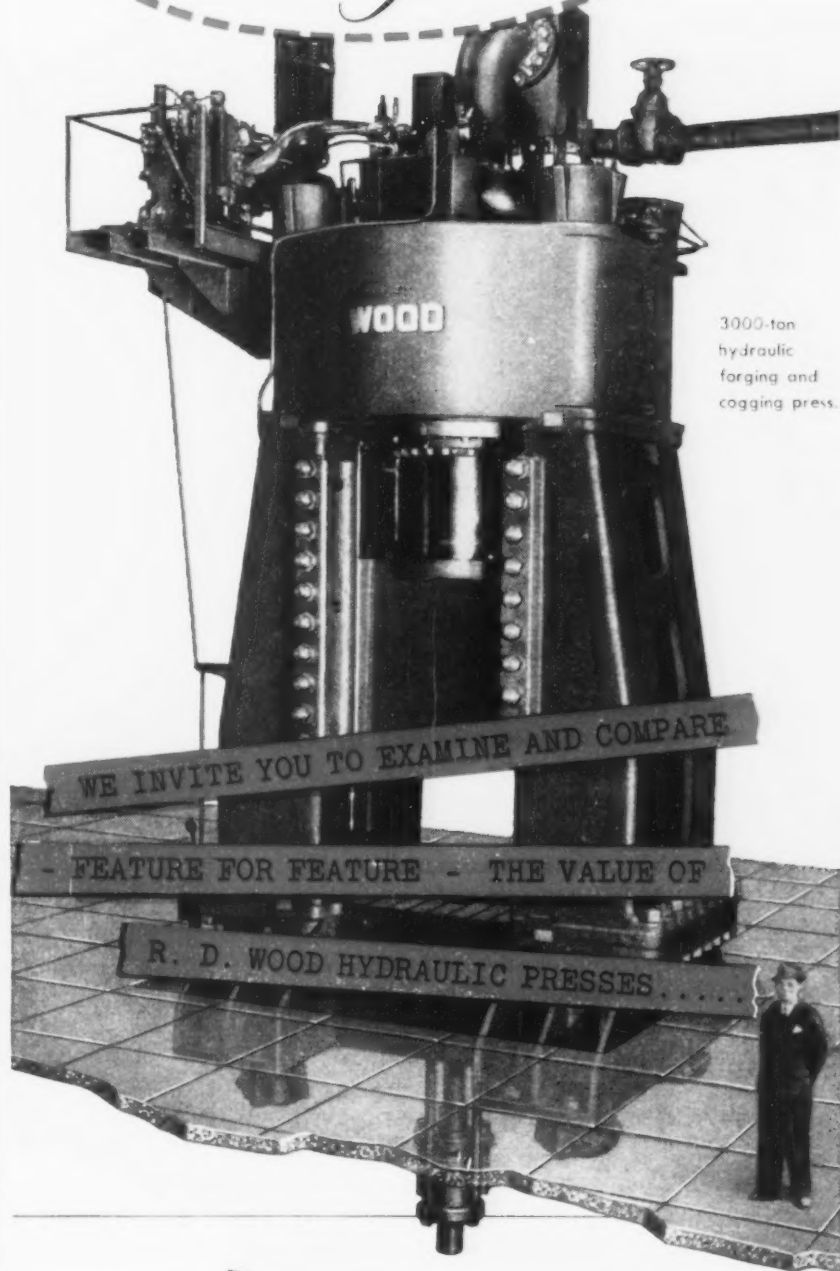
For more data circle No. 37 on postcard, p. 75.



Pallet truck

Close-quarter operation, permitting greater utilization of factory and warehouse space, is possible with a riding-type electric powered pallet truck that can maneuver in aisles 6½ ft wide, with a 40x48-in. pallet. The new Transveyor handles 4000 lb, 48-in. long loads, is 29 in. long plus load length. It is battery-powered with four wheels having three-point suspension. Speed when loaded is about 4 mph. *Automatic Transportation Co.*

For more data circle No. 38 on postcard, p. 75.



3000-ton hydraulic forging and cogging press.

HYDRAULIC PRESSES AND
VALVES FOR EVERY PURPOSE
ACCUMULATORS
ALLEVIATORS
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OSBORN

Osborn has been cutting foundry molding costs for 43 years!

HERE'S HOW

- **DIRECT FACTORY SALES** through experienced foundry-trained Osborn molding field specialists who *spend all their time* on foundry applications.
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- **CONSTANT RESEARCH** that has pioneered the industry's major improvements in more efficient, lower cost molding and core blowing.

INVESTIGATE NOW. Have Osborn's representative check your requirements to see where production can be improved and costs cut. Call or write *The Osborn Manufacturing Company, Dept. 859, 5401 Hamilton Avenue, Cleveland 14, Ohio.*



HERE'S PROOF. Production increased 75% at this foundry through Osborn's mechanical devices.

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Osborn Molding Machines

MOLDING MACHINES . . . CORE BLOWERS . . . INDUSTRIAL BRUSHES

The *Iron Age*

SALUTES

Randolph H. Cope

He's leading tool and die makers in their drive to meet defense needs and beat labor shortages.



RANDY COPE might have made a success story in any one of a number of fields. He's that kind of fellow—noted for his sound business judgment, and possessor of a keen analytical mind.

These traits flourished during his early training and experience as an accountant, and later while he served as controller of Bunell Machine Tool Co. They helped him become vice-president and general manager of that firm, a position he now holds.

Meanwhile, Randy's management ability was being noticed by people outside his own company. It's a tremendous tribute that the technical men who head up more than 600 of the country's leading contract tool and die shops elected him to head their organization, National Tool & Die Manufacturers Assn. For he's not a tool and die maker at all by background.

But he understands their problems, has been a leader of their cooperative efforts since the inception of NTDMA. His wisdom and understanding have made him the association's outstanding consultant on business and financial matters.

From charter member in 1943, through war boom and reconversion, his interest and effort have been unflagging. Now he is leading the tool and die makers in their drive to meet huge defense needs for special tooling and overcome the serious handicap of a shortage of skilled workers.

His favorite diversions are contract bridge and college and professional football. The latter interest can be attributed to his own participation in football, basketball and tennis at Bethany College. He also played professional football.

How **concave sides** cut **V-Belt** costs

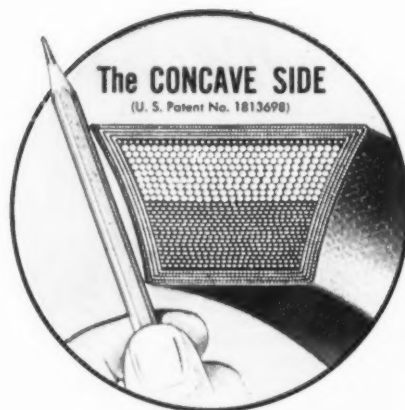
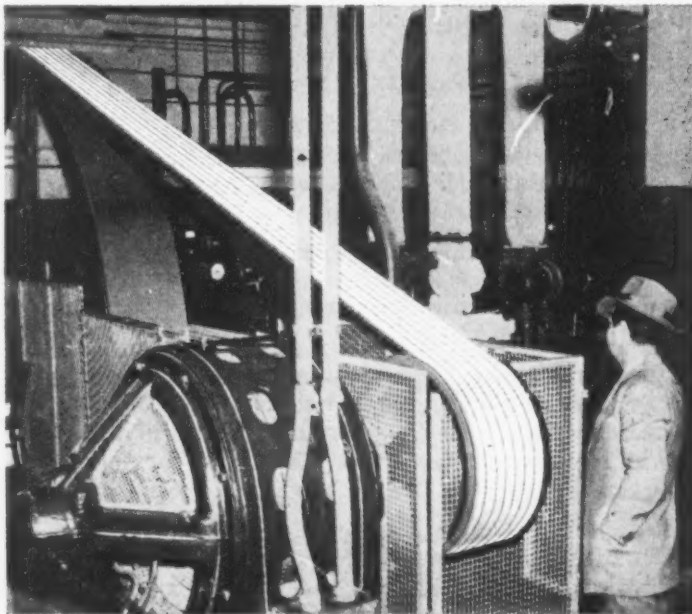
Important to anyone who wants to cut V-Belt replacement costs is the simple, interesting reason WHY Gates Vulco Ropes are built with *Concave Sides* (U. S. Patent 1813698). See Figure 1.



When a Gates belt is bent around a sheave these Concave Sides fill out to full, even contact with the sides of the sheave groove. (Figure 1A). This gives you sure pulling power. And, naturally, because wear is distributed evenly, the Concave Sides actually give you longer wear—longer belt life. That cuts V-Belt replacement costs.



On the other hand, when a straight sided V-Belt (Figure 2) is bent, the sides bulge out, preventing the belt from fitting evenly in the sheave groove. This causes *extra wear* at the points shown by arrows. (Figure 2A).



Make this simple test yourself...



Hold a straight sided V-Belt as it would be bent around a sheave. Take the sides of the belt between your finger and thumb. You can *feel* the

bulges in the sides—the bulges that prevent an even fit in the sheave groove and cause extra wear.

Now do the same thing with a Gates Vulco Rope. You can feel the sides fill out. You can see why they press firmly and evenly against the sides of the sheave groove—giving you longer belt life—lower belt costs.

When you buy V-Belts be sure to get Gates Vulco Ropes—the V-Belts with the Concave Sides.

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

SAVING \$1,000 A YEAR

This big 18 foot flywheel on an ammonia compressor at the Terminal Warehouse Co., St. Joseph, Missouri, was originally driven by a flat belt.

Mr. I. McKee, plant superintendent says, "We needed a drive we could depend on, so we installed a Gates Vulco Rope drive right on the flat pulley of the compressor. This conversion is saving us about \$1,000 a year."

CS-526-A



VULCO ROPE DRIVES

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**V-Belts — Hose
Molded Rubber Goods
for industry
World's Largest Maker
of V-Belts**

The Iron Age

INTRODUCES

William J. Taylor, appointed president, EXOTHERMICALLOYSSALES & SERVICE, INC., Bridgeville, Pa.; **William F. Skeer**, named vice-president; **Gordon B. Thomson**, made secretary-treasurer; and **Jess C. Kerr**, elected director.

David A. Thomas, appointed executive vice-president and general manager, AUTOMATIC STEEL PRODUCTS, INC., Canton, Ohio.

Lyle F. Gulley, appointed assistant to vice-president in charge of operations, GRANITE CITY STEEL CO., Granite City, Ill.; **Robert B. Leggat**, named purchasing agent; and **John D. Rosebrough**, appointed sales manager.

E. D. Tull, named to newly created position of vice-president and general manager, CUMMINS ENGINE CO., INC., Columbus, Ind.

John J. Grady, becomes executive vice-president and general manager, CHROMIUM MINING & SMELTING CORP., Chicago, and Montana Ferroalloys, Inc., Memphis.

George L. Langreth, finance vice-president appointed treasurer, BLAW-KNOX CO., Pittsburgh.

A. E. Moore, appointed vice-president and director of Research and Development, R. M. HOLLINGSHEAD CORP., Camden, N. J.; **V. M. Mantz**, named director of government and Industrial Research; and **V. Esposito**, made director of New Products Development.

John R. Markey, named assistant to vice-president. ARC EQUIPMENT CORP., Bryan, Ohio.

L. Irving Woolson, elected president, DESOTO MOTOR CORP., a subsidiary of Chrysler Corp., Detroit. He succeeds the late C. E. Bleicher.

R. R. Huntington, appointed sales engineer, Louisiana, Mississippi & Eastern Texas, JOSEPH DIXON CRUCIBLE CO.

Ralph J. Furstoss, named assistant director of research, CATERPILLAR TRACTOR CO., Peoria, Ill.

Victor Welge, appointed associate director of engineering, P. R. MALORY & CO., INC., Indianapolis.

George H. Powers, appointed refractories engineer, New York and New Jersey areas, NORTON CO.; and **Lincoln M. Johnson**, named honing engineer.

W. C. Sealey, named chief engineer, transformer section, power Dept., ALLIS-CHALMERS MFG. CO., Milwaukee.

R. P. Crawford, named chief inspector, Greenville Div., TEMCO AIRCRAFT CORP., Dallas.

John L. Myers, appointed products engineering manager in charge of design, NATIONAL ELECTRIC PRODUCTS CORP., Pittsburgh.

Wallace Findlay, appointed treasurer and director, THE L. S. STARRETT CO., Athol, Mass.; **Clifton G. Bigwood** and **Douglas R. Starrett**, appointed directors.

Clarence B. Berg, appointed sales engineer, Carboly Dept., GENERAL ELECTRIC CO., Detroit; and **Donald H. Coats**, named sales engineer.

H. E. Fellows, named manager of surveys, LESTER B. KNIGHT & ASSOCIATES, INC., Chicago, and **Clifford O. Boyce**, named assistant manager, Construction Engineering Div.

Glen Carter, becomes manager, Paper & Printing Market, REYNOLDS METALS CO., Richmond, Va.

Lawrence W. Mattson, becomes district manager, West Coast, AMERICAN MACHINE & FOUNDRY CO.

John H. Sibbison, Jr., appointed sales engineer AMERICAN FIRE CLAY & PRODUCTS CO., Canfield, Ohio.



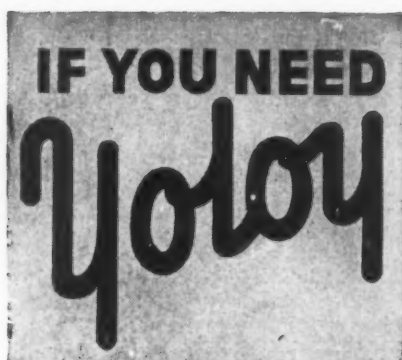
KEMPTON DUNN, elected first vice-president, American Brake Shoe Co., New York.



G. FINDLEY GRIFFITHS, appointed vice-president of sales, Acme Steel Co., Chicago.



ROBERT W. HOLMAN, appointed assistant general superintendent, Gary Sheet & Tin Mill, U. S. Steel Co.



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**complete stocks of
YOLOY PLATE, BAR
SIZE ANGLES, HOT
ROLLED SHEETS 10
TO 14 GAGE INCLU-
SIVE. COLD ROLLED
SHEETS 16 TO 22
GAGE INCLUSIVE.**

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- ALLOY COLD FINISHED BARS
- HOT ROLLED BARS
- STRUCTURALS
- HOT ROLLED PLATES
- ABRASION RESISTING PLATE
- HOT ROLLED AND COLD ROLLED SHEETS
- HOT ROLLED STRIP
- DEFORMED REINFORCING BARS
- YOLOY PRODUCTS
- SOFT BLACK ANNEALED WIRE
- BRIGHT BASIC WIRE AND WIRE RODS
- WIRE ROPE AND FITTINGS
- WELDED WIRE MESH

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16700 St. Clair Ave.
CLEVELAND 10, OHIO
1003 Fisher Bldg., Detroit 2, Mich.

Personnel

Continued

Lyndon B. Burnham, appointed general sales manager, **WORCESTER PRESSED STEEL CO.**, Worcester.

E. W. Ervasti, becomes manager of Industrial sales, Wolverine Tube Div., **CALUMET & HECLA CONSOLIDATED COPPER CO.**

William L. Gillespie, appointed field salesman, Chicago and Midwest Area, **HOOVER ELECTRO-CHEMICAL CO.**

Vernon D. Rogers, appointed assistant to general office manager, Chicago, **JOSEPH T. RYERSON & SON, INC.**; and **William O. Springer**, named manager, New York plant.

George B. Bond, appointed sales promotion manager, Alemit lubrication equipment and Stewart-Warner Instrument Div., **STEWART-WARNER CORP.**

Courtland Barwick, promoted to manager, southern region, **CHAS. PFIZER & CO., INC.**; and **Carter Richardson**, made manager, Richmond, Va., district.

Whitford A. Baldwin, appointed manager, Unit-Load Dept., **ACME STEEL CO.**, Chicago.

F. L. Blodgett, promoted to assistant general sales manager, **ALLOY RODS CO.**, York, Pa.

Albert J. Novak, appointed assistant general sales manager, **THE BRUSH DEVELOPMENT CO.**, Cleveland.

John K. Rye, appointed general manager, **F. JOS. LAMB CO.**, Detroit.

Richard K. Schrecongost, named manager, Die Cast Machinery Div., **HYDRAULIC PRESS MFG. CO.**, Mt. Gilead, Ohio.

D. J. Jones, appointed general sales manager, **HONAN-CRANE CORP.**, Lebanon, Ind.

William N. Bennett, named district manager, New England, **BRIDGEPORT CHAIN & MFG. CO.**, Bridgeport, Conn.

E. E. McAllister, appointed salesman, Princeton, W. Va. territory, **FIRTH STERLING INC.**, Mining Div.

James D. Rolando, appointed member of Sales Dept., Brainard Steel Div., **SHARON STEEL CORP.**, Sharon, Pa.

Robert E. Cline, joins the sales staff of **BUILDERS STRUCTURAL STEEL CORP.**, Cleveland; and **James S. Thomson**, appointed manager of Costs and Billing Dept.



A. DONALD KELSO, becomes president, **Norton Behr-Manning Overseas Inc.**, Worcester.



GEORGE H. ROUSE, appointed vice-president, **Stevens Mfg. Co., Inc.**, Mansfield, Ohio.



T. J. ELLIS, elected a vice-president, **Thermoid Co.**, Trenton, N. J.



ROBERT N. HARWOOD, named a vice-president, **Solar Steel Corp.**, New York.

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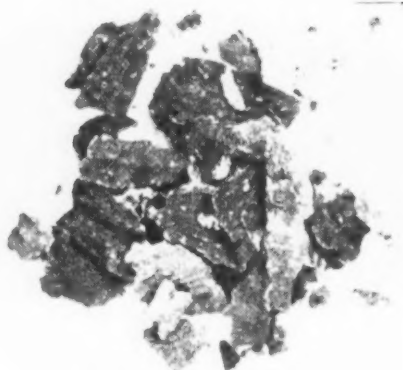




Specialists in Industrial Cleaning Products



ZORBALL



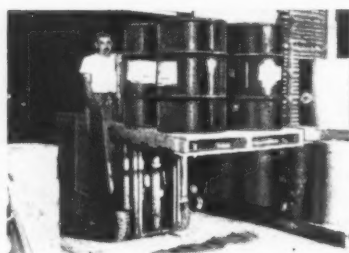
COMPETITIVE PRODUCT

Wet absorbents after 2 hours' heavy traffic

NOTE: Zorball still granular! Continues to be nonskid, safe, still usable. Easily swept from floor with ordinary brush!

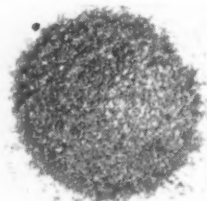
Competitive product is slippery, caked mud! Very dangerous, difficult to remove. Metal scraper needed to remove this sample!

POSITIVE PROOF! Zorball is the safest, lowest-cost floor absorbent known!



Test samples of Wyandotte Zorball and a well-known competitive absorbent sold for all-purpose use were placed in this busy runway. For 2 hours heavy trucks pounded over them. Results shown above and below.

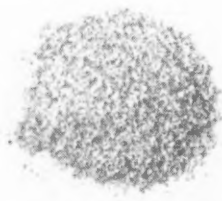
These pictures are proof that Wyandotte Zorball is the safest floor absorbent because it *resists breakdown*, retains nonskid properties as long as it's on the floor. This long life makes it the lowest-cost absorbent, too: *less* Zorball is required to do the job! Your Wyandotte representative can prove this by demonstration on your floors. Call him today. *Wyandotte Chemicals Corporation, Wyandotte, Michigan; also Los Angeles 12, California.*



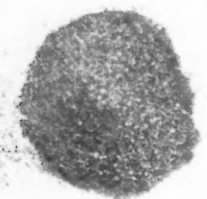
ZORBALL

ABSORBENTS BEFORE USE

Most absorbents look good when first put down. Both products were screened for these tests and the coarser particles used.

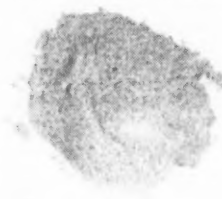


COMPETITIVE PRODUCT



DRY ABSORBENTS AFTER 2 HOURS' HEAVY TRAFFIC
ZORBALL, left, still granular. Retains nonskid properties!

Competitive product, right, is powdered dust. Has lost nonskid properties completely!



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Personnel

Continued

Charles L. Copeland, named assistant sales promotion manager, Pontiac Motor Div., GENERAL MOTORS CORP.

Arthur F. Norling, appointed sales representative, Cincinnati district, CHASE BRASS & COPPER CO., INC.; William J. Weir, appointed sales manager of wholesale accounts; and Arthur C. Hoey, named sales representative, Cleveland district.

Stan Houston, appointed sales representative THE MEHL MFG. CO., Cincinnati.

Canute R. Olsen, appointed manager, of the market development division, Supply Div., U. S. STEEL, and Linus E. Olson, named manager of inventory control division, Sales Dept.

Charles J. Gerhardt, appointed assistant controller, DALMO VICTOR CO., San Carlos, Calif.

Thomas L. Bray, appointed works manager, Buffalo Steel Div., H. K. PORTER CO., INC., Tonawanda, N. Y.

Martin Fitzimmons, appointed general manager, Cyanamid de Mexico, a subsidiary of AMERICAN CYANAMID CO., New York.

Fred Hennig, Jr., appointed manager, Chicago - Midwestern District, KENAMETAL INC. He succeeds Raymond B. Weeks, who retired recently.

J. D. Bryan, Jr., appointed sales promotion manager, PEDEN IRON & STEEL CO., Houston.

E. Eldridge Smith, appointed sales manager, SYNTHANE CORP., Oaks, Pa.

M. L. Snodgrass, named sales manager, Heavy Furnace Div., SARGEANT & WILBUR, INC., Pawtucket, R. I.

R. G. Baker, named regional sales representative, DELAVAL STEAM TURBINE CO., Trenton, N. J.

OBITUARIES

William H. Dunn, 69, retired treasurer and director of Raybestos-Manhattan, Inc., recently at his home in South Orange, N. J.

F. Edward O'Neill, 69, chairman of the board, Fulton Iron Works Co., St. Louis.

Dr. Ernest J. Abbott, 52, manufacturer and nationally-known research physicist of Ann Arbor, Mich., recently.



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Made over machines, fixtures Get production moving



By Donald F. Taylor

General Superintendent
Buick Motor Div.
General Motors Corp.
Flint, Mich.

When the Army pressed for fast delivery of CD-80 tank transmissions, Buick engineers had to think fast. New special purpose machinery hadn't arrived. Buick scrounged around for idle machinery in Army reserves, picked up quick delivery machines, sorted over old fixtures. Inventive tool engineers came up with machines that got shipments moving. Setups weren't always ideal and many machines will be replaced later. But production is moving and many production bugs are being ironed out early—where it hurts least.

Resourcefulness and enterprise in machining operations are helping speed production of Army CD-80 tank transmissions at Buick Motor Div., General Motors Corp., Flint, Mich. Faced with pressing delivery demands, before special design machinery was available, Buick looked over some old machines and fixtures and came up with several unusual home-made machine tools. These helped get production out the door of its partly converted Dynaflo transmission plant.

Emergency conversions were made from Army reserve stocks and other prompt delivery sources.

Often it was necessary to use general purpose tools, even though production setups were not ideal. But earlier production was gained and it will be easier to effect design changes later if necessary.

Samples of the "make-do" machines which Buick has turned out are illustrated in production of the aluminum alloy transmission housing. The housing is cast in two halves—both large and thick-walled.

Highest speeds and feeds feasible are used in machining, with carbide tips if possible, for both economy and good finish. Cutting com-

"Improvised to get into production . . . Cutting is quickly and simply done . . ."

pound rich in Vantrol has been found helpful. Distortion often prevents heavier cuts from being used however.

The transmission housing is split longitudinally along the face of flanges. These have to be held within 0.0015 in. of true flatness. Numerous machining operations are performed with the casting clamped or bolted against the flat face, a locating and reference face for many dimensions.

For several machine setups, half cases are mounted on trunnioned fixtures against which the flat face is fastened. Some of these fixtures, Fig. 1, heavy and unbalanced, have a large sprocket attached to one trunnion. Holes through

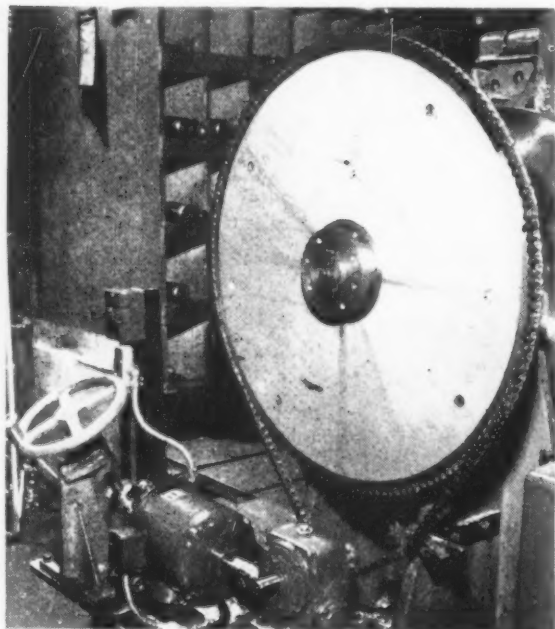


FIG. 1—Indexing sprockets are used on trunnioned fixtures for transmission castings. Either the motor or the hand wheel can be used to turn the small drive sprocket on the output shaft of a worm reducer.

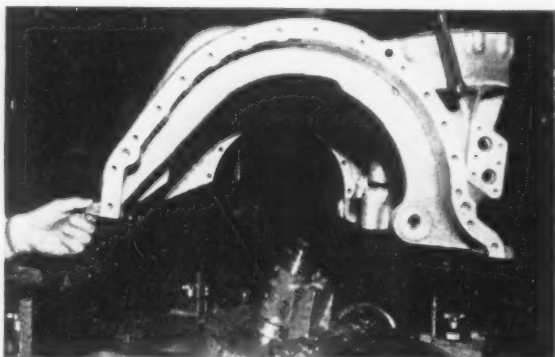


FIG. 2—Special fixture includes a Bridgeport milling head for cutting an oil slot inside the rear housing.

the sprocket take close fitting pins to insure precise indexing.

A roller chain passes around the large sprocket. A small sprocket is motor driven through a worm gear reducer. Indexing is rapid and easy and the fixture cannot rock or fall when indexing pins are removed. A hand wheel geared to the motor shaft permits fine indexing adjustment.

Fixtures of this type are used for work on radial drills, especially for holes not normal to the flat face. Casting may be quickly turned to any position in a full 360°.

Spindle cutter mills oil slot

An unusual homemade machine, Fig. 2, is a fixture with a special Bridgeport milling head attached. A spindle mounted cutter mills an oil slot in the inner rail of a rear housing. The spindle rocks into position and is traversed longitudinally by a hand wheel to make the cut.

A Cincinnati horizontal spindle Hydrotel machine, Fig. 3, is used to machine a valve body face with a 10-in. cutter. The Hydrotel feature is not used in making a cut since form following is not required. But the machine was available, afforded a large bed space, and is capable of high spindle speed. The cut has to be made between projections and could not be made readily on more conventional tools.

Another homemade machine, Fig. 4, drills an oil gallery hole $\frac{5}{8}$ in. in diam x $40\frac{1}{2}$ in. long in front and back castings. Standard heads for such drilling are not unusual but are commonly used on special beds and then classed as "special" machines. In this case, heads were not available and had to be fabricated with the hydraulic feed desired. The bed was made from the lower portion of an obsolete Buick automotive sheet-metal die.

To shorten drilling time and avoid too long a hole for a single drill, the hole is drilled from both ends. Each of the two gun drills produces about half the total hole length. Both spindles turn at about 1000 rpm and are fed simultaneously by rams of conventional hydraulic cylinders. When drill tips, which include carbide inserts, are about $\frac{1}{2}$ in. apart, one drill is backed

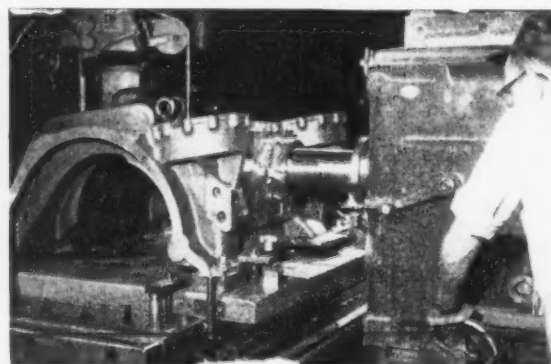


FIG. 3—A horizontal spindle Cincinnati Hydrotel is used to machine a valve body face in a rear transmission housing.

out and the other finishes the hole. Limit switches control timing.

Feed is varied somewhat with oil temperature but averages 0.0025 ipr. Oil fed through the hollow drills forces chips out of the hole as rapidly as they are produced. Although this machine was improvised to get into production rapidly, it does good work.

Rear half-housing flanges have to be back spotfaced at several points to provide nut or bolt head seats. At these points ordinary spotfacing cannot be done, because projecting parts make the locations inaccessible. A standard Taft-Pierce machine drives the back spotfacing tool but is dwarfed by the large fixtures needed to support the large casting. Actual cutting is quickly and simply done but the trick is to position the casting properly and quickly for each hole, as the end of the spindle cannot be seen by an operator working above the fixture.

To locate the work piece properly and quickly for each hole, the fixture base, Fig. 5, is mounted on ways parallel to the axis of the casting. Along the edge of this base are notches into which a V-shaped spring detent fits. Whenever the detent locks in a notch, a corresponding hole is in the same vertical plane (at right angles to the ways) with the spindle axis.

Transverse location required

Since all holes are not in the same straight line transverse location is required. Top plate of the fixture is also on ways to permit movement toward or away from the operator. Location here is by a cam fitting in a slot under the top plate.

This slot and cam are so made as to move the table transversely, if required, and the necessary amount to bring each hole precisely in line with the spindle as the base is traversed along its ways and is stopped by the spring detent. Consequently, at any given setting, it is only necessary to move the spindle upward and it enters the corresponding hole.

End faces of pairs of assembled housing castings are straddle milled in the Newton machine, Fig. 6, a substantially standard machine that

happened to be available. Cutters, however, are 30 in. in diam and have solid carbide inserts. Their speed is high, even at moderate spindle speeds, because of the large diameter at which cutting edges are set. Spindles retract hydraulically on the back stroke so cutters cannot drag and mark the face just milled.

About 1/16 in. of metal is removed on a side. Cutter blade speed is about 2200 fpm and the work is traversed at 12 ipm. The fixture is heavy and the work piece firmly clamped to minimize chatter.

Other standard machines employed include 64-in. Bullard Cutmaster vertical turret lathes shown in Fig. 7. Each has a fixture against which an assembled housing is clamped. Although the work piece rotates with the table, the speed of rotation must be low to prevent distortion.

Most cuts are inside the casting and cannot be seen by the operator. He has to set tools by

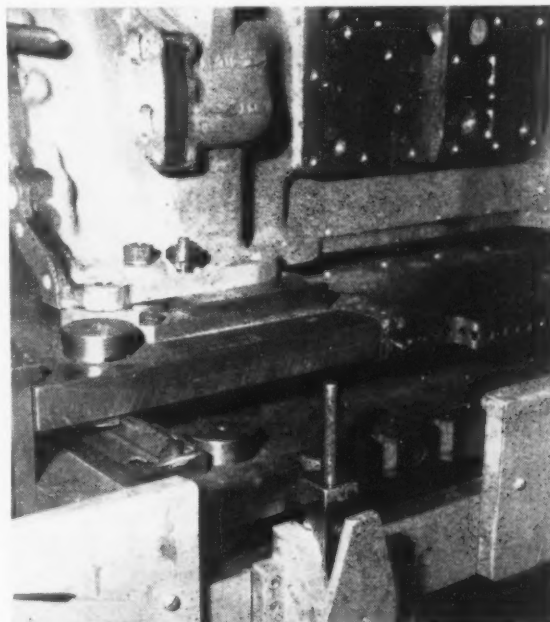


FIG. 5—Difficult back spot facing of flange holes is simplified by longitudinal and transverse indexing of the fixture on which casting is mounted. Note spring detent center.

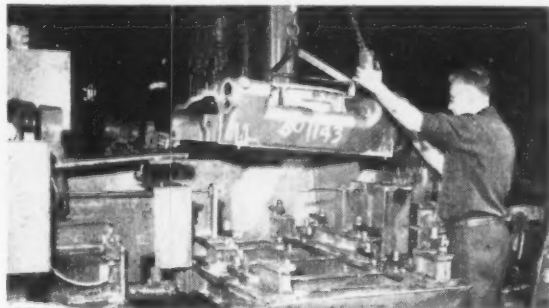


FIG. 4—Loading a homemade machine that used two hydraulically fed drills to produce a 5/8-in. diam oil gallery hole 40 1/2 in. long. Both front and rear half housings are handled in this machine.

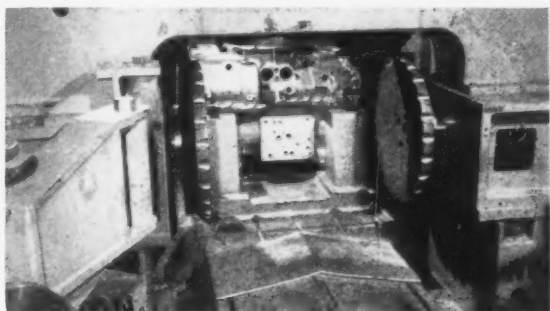


FIG. 6—End faces of housing assembly are straddle milled in a Newton machine having 30-in. cutters with solid inserted carbide blades. Cutters retract to clear work on return.

"Many gaging and inspection operations . . . A pressure test . . . reveals porous spots . . ."

indicating dials and know the casting to avoid making cuts where not wanted. One profile and three bores have to be machined and some facing cuts made. As some cuts are 30 in. below the top of the casting, stiff boring bars are required to avoid chatter.

Many gaging and inspection operations are necessary. Some involve specified tests. A pres-

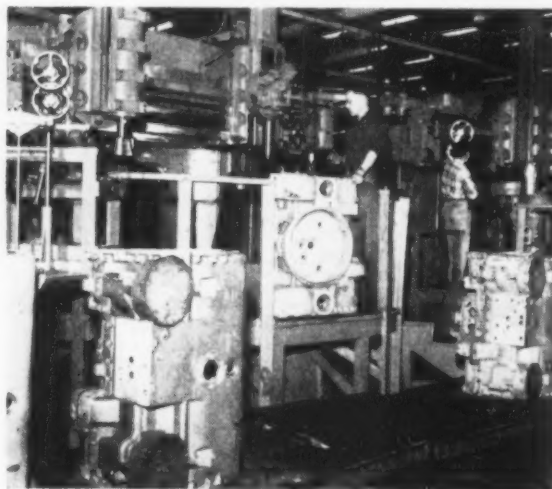


FIG. 7—Transmission housing assemblies are bored on two 64-in. vertical spindle Bullard turret lathes. Deep 30-in. cuts require stiff boring bars to avoid chatter.

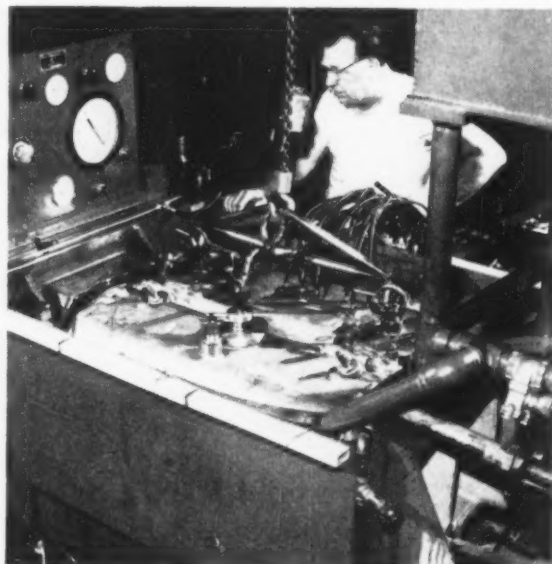


FIG. 8—Special Beach machine is designed to clamp and apply air pressure inside a machined housing, to help locate casting leaks.

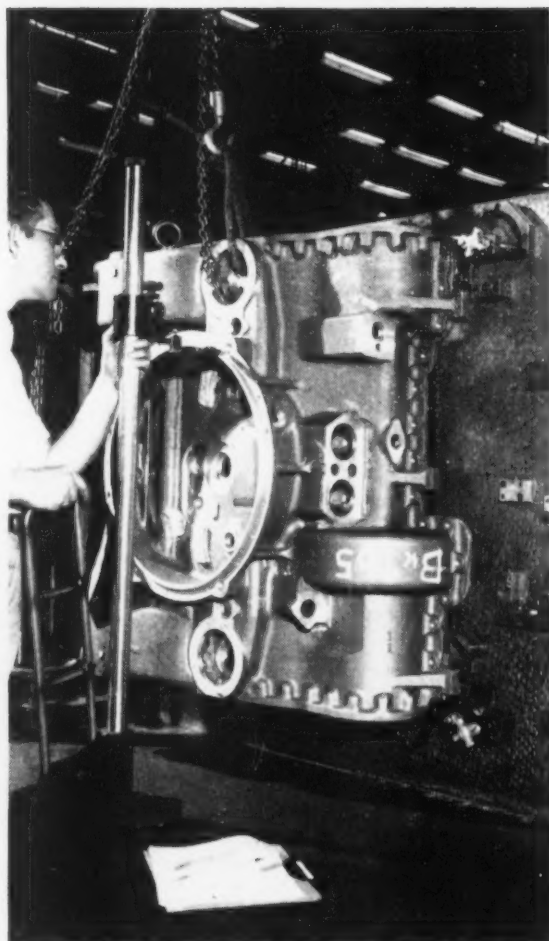


FIG. 9—Angle plate fixture for checking location of bored holes in relation to construction holes. Step buttons at right are used to set height gage at zero for each hole to be checked.

sure test designed to reveal porous spots or leaks is made in a special Beach machine, Fig. 8. The casting, open on the parting face and both ends, is hydraulically clamped with gasket plates on three sides and plugs at other openings, into test fixture in a tank. Air is admitted to apply a specified internal pressure, then shut off.

If pressure falls during a test period, one or more leaks are present. If leaks are to the outside, the tank is filled with water and the location is revealed by air bubbles in the water.

If the leak is from an oil line to the inside of a casting, another fixture is used with a soap solution applied to help locate the leak.

Among dimensional checks required is that of hole height from a standard reference surface, Fig. 9. The casting is clamped against a vertical face plate on which it is positioned by locating pins.

On the vertical plate are numbered stepped setup buttons or pins of established height. These are used to set the height gage to zero. The gage is moved to the corresponding hole and the lowest point in the bore is checked.

Hopper, Conveyer and Silo

REPLACE YARD GANG



By E. H. Taylor
Plant Engineer
F. E. Myers & Bro. Co.
Ashland, Ohio

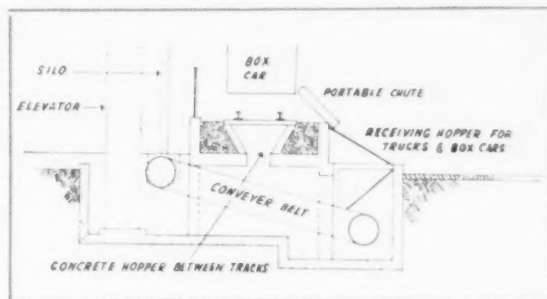
Unloading carloads of foundry sand can be costly in time, effort, space and cost when done without proper handling equipment and storage facilities. One man, using a good combination of standard handling equipment, can unload a 50-ton car of sand in less than 1 hr, a job which previously occupied 6 men for a full day. And storage capacity will hold a 6-wk supply—ample for stormy winter periods when shipment is difficult. Sand is dry when received and kept dry throughout handling.

Installation of a silo, elevator, and conveyer setup makes it possible for one man to unload a 50-ton carload of sand in one hour. Before this setup was installed, sand was shovelled by hand from gondolas into a building through open windows. This unpopular job occupied a yard gang of six men for a full day. The mixer operator then shovelled and carted three wheelbarrow loads for each $\frac{1}{2}$ -ton batch. Moreover, sand ordered dry often came during winter storms causing demurrage or wet or frozen sand, or both.

With the present setup, sand can be delivered by hopper bottom car, box car or truck. Shipments received by box car or truck are dumped into the hopper alongside the tracks of a railroad siding. A continuous belt running from the hopper through a concrete tunnel under the siding conveys the sand to the boot of a bucket elevator. The elevator in turn discharges the sand into the silo. Hopper bottom cars dump

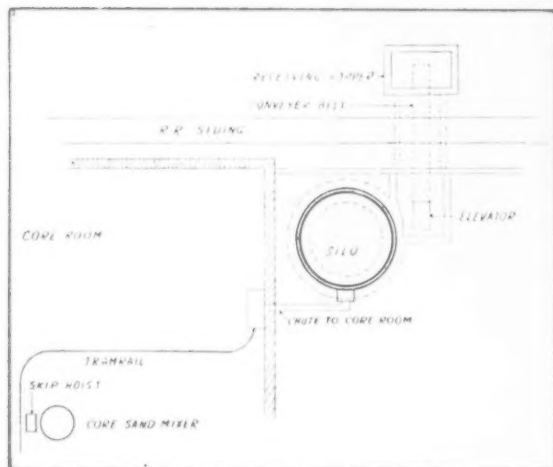
through a roof opening of the tunnel onto the same conveyer belt.

The 16-ft diam by 50-ft high silo has storage space for 300 tons of sand, thereby providing large capacity in a small area. This storage capacity holds a 6-wk supply which is ample to

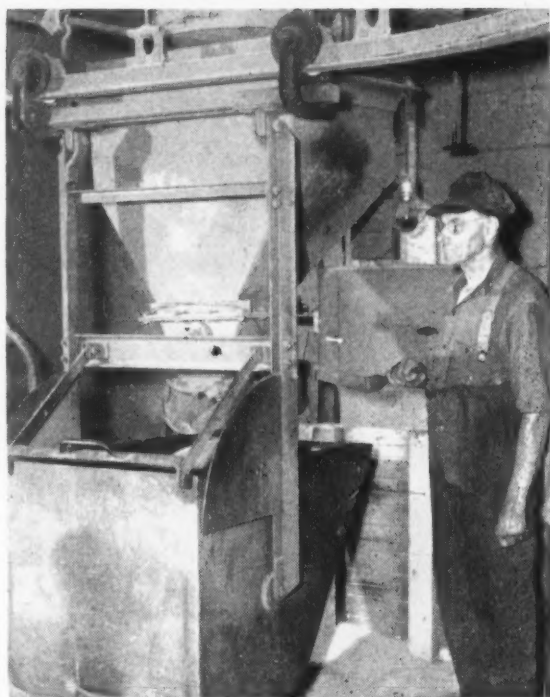


SECTIONAL VIEW of the equipment which receives sand from a hopper bottom car, box car or truck and delivers it to a waterproof silo by conveyer and elevator.

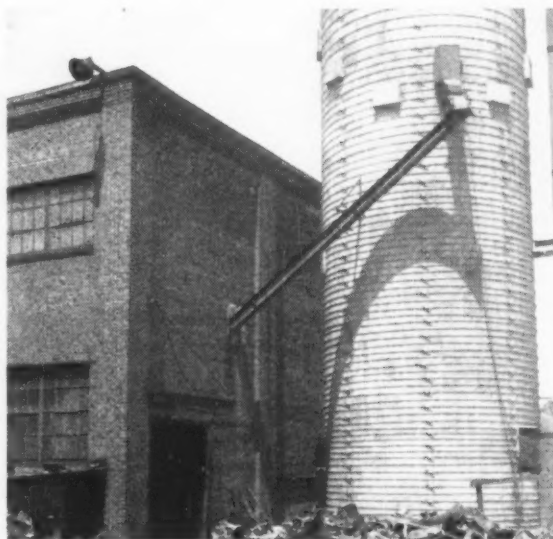
"Bucket on the overhead tram-rail carries 3 x as much sand as was previously carted . . ."



PLAN VIEW of the entire layout shows the movement of sand from the time it is received in the hopper under the railroad siding until it reaches the core sand mixer.



BUCKET CARRIER on the tramrail ready to receive 1000 lb batch of sand from the weigh hopper.



STORAGE SHELF CHUTE from the silo delivers sand through the wall of the core room.

carry the foundry through a period of stormy winter weather when shipments may be difficult. Heretofore, covered storage capacity was limited to two carloads. Sand is purchased dry and is kept dry by conveying it under cover at all times. The silo walls are waterproofed to further prevent absorption of moisture.

An elevated sloping shelf in the silo permits the sand to slide down a chute into a weigh hopper in the core room. The sand is then dumped into a bucket which travels on an over-



SKIP HOIST delivers sand to the core sand mixer.

head tramrail and conveyed in 1000-lb batches to the skip hoist of the core sand mixer.

At the present time, one man operates the equipment while another man stands by in case of accident or other difficulty. Although storage is outdoors, thus saving core room space, the mixer operator does no shovelling and can load the bucket indoors. One bucket on the overhead tramrail carries three times as much sand as was previously carted by wheelbarrow. In addition to the time, effort and space saved, the total installation cost of \$21,250, will be repaid every three years.

Air chuck setup cuts machining time, Improves quality

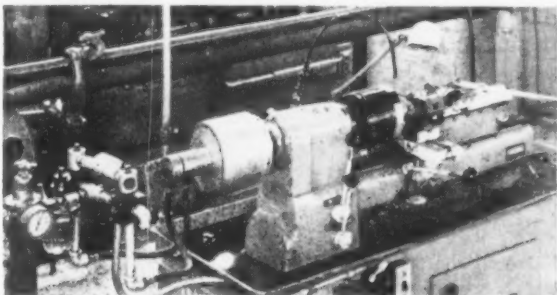
By Dwight E. Harris

Asst. Chief Engineer
Skinner Electric Valve Div.
Skinner Chuck Co.
Norwalk, Conn.

Machining the small end of a flanged plunger to a flatness below 0.001 in. and an overall length tolerance of ± 0.001 in. caused considerable difficulty. Conventional draw bar collet couldn't be used because of the flange projection and because its diameter tolerance resulted in finished length variations. Use of an air chuck setup increased production by 300 pct and resulted in closer adherence to specifications.

Use of an air operated chuck and electric air control valves has enabled the Skinner Electric Valve Div. of the Skinner Chuck Co. to overcome a simple but troublesome problem in the finish machining of a stainless steel plunger. Although setup on a turret lathe, in this case, the equipment is easily adaptable to other jobs and has been used to machine a variety of similar parts.

Difficulty was encountered in machining the small end of a flanged plunger blank to a flatness within a small fraction of 0.001 in. Overall length of the piece had to stay within ± 0.001 in. The conventional draw bar collet couldn't be used to grip the work because of the flange projection on the plunger and because the diameter tolerance of the plunger resulted in variations in finished length. The air chuck provided sufficient opening of the jaws to permit insertion of the flange into a recess and insured length accuracy by using a fixed locating stop for the work.



AIR CHUCK setup on Hardinge lathe permitted a 300 pct increase in production and improved quality.

The solenoid valves which operate the chuck are controlled either by a switch located at the front of the machine or by limit switches on the cross-slide or turret-slide. In a typical operation, the revolving chuck is opened automatically when the tool-slide is retracted, and the work is loaded without stopping the lathe. When the tool is advanced, the limit switch causes the work to be gripped. After machining, the tool is returned to its original position and the work is released.

This setup contributes to greater safety in that the limit switch prevents opening of the chuck during cutting, chuck design is such that failure of air or current supplies will not release the jaws, and the jaws are flush with the chuck face thus preventing possible injury to the operator.

On the machining of one part time studies made have shown this setup to increase production 300 pct over previous methods. Inspection reports indicate extremely close conformance to specifications, which has not only reduced inspection time but has improved product performance. Also less concentration is required of the operator, permitting the use of less skilled personnel.

While the setup described is primarily an attachment to a manually operated machine for moderate production quantities, it offers possibilities for use in semi-automatic and automatic equipment with similar advantages in cost reduction and quality improvement.

Study metal behaviour



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WITH LARGE METAL CRYSTALS

A better understanding of the plastic behaviour of metals is being sought at The Johns Hopkins University through study of large single metal crystals. Single crystals of high melting point metals such as molybdenum, tantalum, columbium and tungsten have been grown. Data cannot yet be directly applied to polycrystalline aggregates. But in growing data metallurgists think they may find the answers to some tough metallurgical problems. Typical is molybdenum metal. The commercial pressed-sintered and arc-melted product is brittle. But pure molybdenum crystals can be extended 75 pct, rolled 98 pct.

A better understanding of the plastic behaviour of polycrystalline industrial metal is being sought through research on the behaviour of single crystals. Study of grain structure, the effects of grain boundary interference under stress, and grain deformation can be simplified through use of large single crystals subjected to plastic deformation under various conditions.

Single metal crystals may be grown by: (1) Solidification from the liquid; (2) stimulated growth of an individual grain after plastic deformation; (3) crystal growth by precipitation from the vapor phase; (4) growth by electrolytic deposition.

Most famous method for solidifying large single crystals from the liquid was devised by P. W. Bridgman. A crucible containing a charge of metal is suspended in the hot zone of a vertical tube furnace. When the charge is melted, the crucible is slowly lowered through the hot

zone. Solidification occurs first at the bottom of the crucible and proceeds upward as the crucible is lowered.

A modification of this method holds the crucible stationary and moves the furnace. Another modification, thought to produce fewer imperfect crystals, makes use of the fact that a fairly linear temperature gradient can be built into the furnace. Lowering the gradient by suitable controls results in gradual solidification. Crystals 1½ in. across x 24 in. long of nickel, copper, aluminum, zinc, cadmium, antimony, silver, magnesium, and alloys of these materials have been grown.

By the second method a metal with a critical grain size, subjected to a critical plastic train when treated at successively higher temperatures close to its melting point, will result in a single grain.

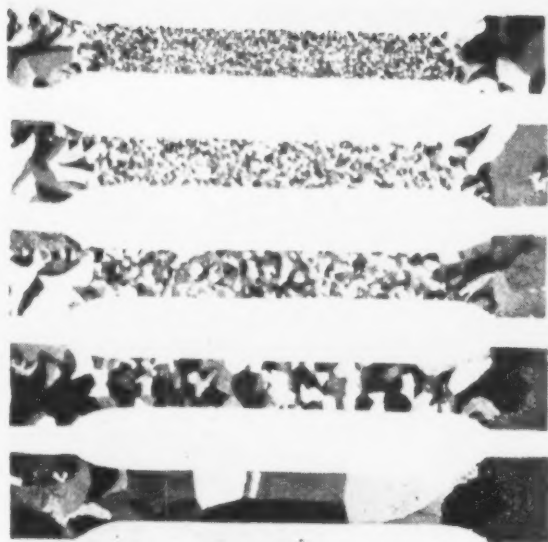


FIG. 1—Increase in size of grains of aluminum after successive heat treatments at 500°, 550°, 600°, 650°C.

For example, a pure aluminum bar $\frac{1}{2}$ in. in diam x 8 in. long whose grain size is 0.001 in. is subjected to a plastic strain of 2½ pct elongation. The specimen is held at 500°C for 24 hrs followed by 24 hrs at 550°C, 600°C and 650°C. A single crystal occupying almost the complete bar results. Such increase in grain size in an interrupted test is shown in Fig. 1. This method has proved successful for aluminum, magnesium and iron. In the case of iron, annealing temperature must be just below the temperature at which it changes its crystal structure, 910°C.

A modification of this technique devised re-

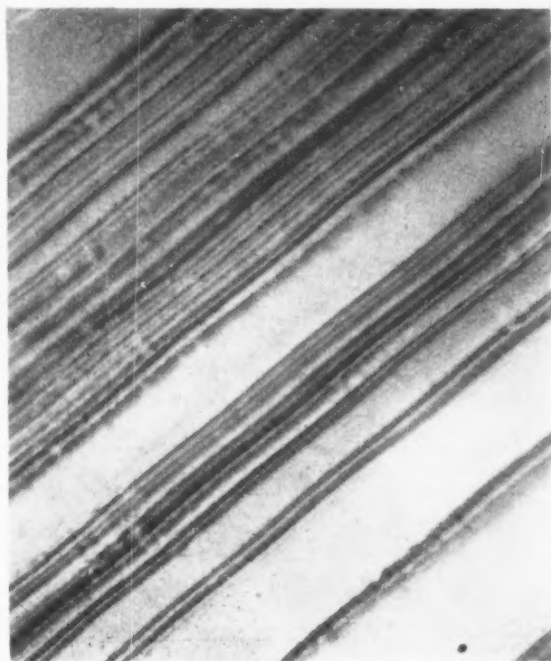


FIG. 3—Slip or glide bands produced in the elongation of a brass single crystal. 800X.

October 23, 1952

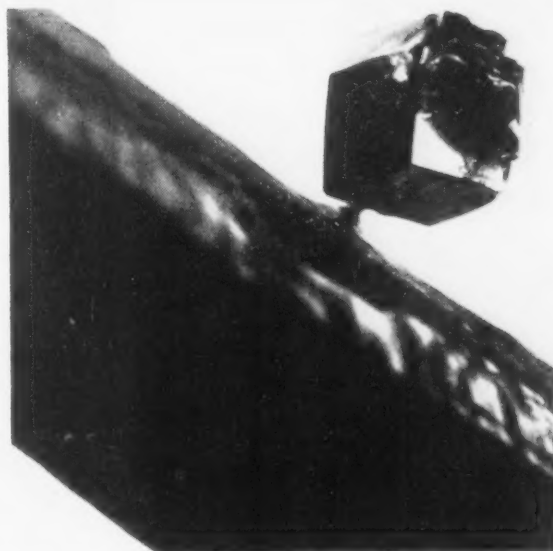


FIG. 2—Crystal of molybdenum grown by vapor condensation. Large crystal was grown from seed crystal.

cently at the Johns Hopkins university has resulted in growth of single crystals of high melting point metals, such as molybdenum, tantalum, columbium and tungsten. A rod of molybdenum (produced by powder metallurgy) $\frac{1}{8}$ -in. in diam x 7 in. long is heated in a vacuum by passing a high electric current through it. Electrodes which hold the specimen are water cooled. Rapid grain growth occurs and a large grain occupying the complete cross-section for about 3 in. results.

Crystal growth by precipitation from vapor requires condensation of the metallic vapor, usually upon a seed crystal (a small section of a preformed crystal of the same metal). Small polyhedra of tantalum, iron, zirconium, titanium and molybdenum have been grown. A small

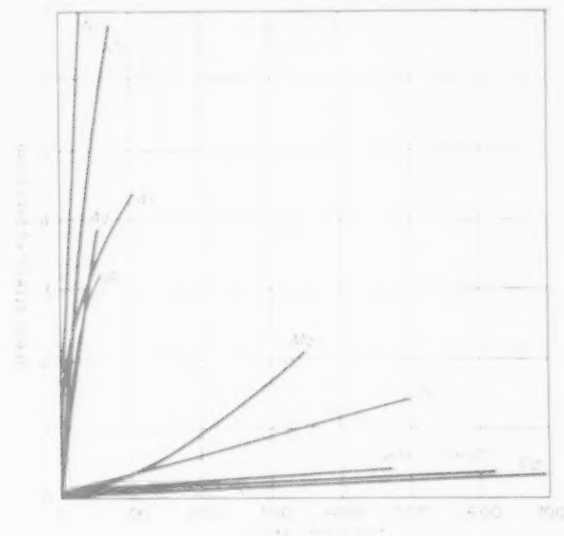


FIG. 4—Strain hardening curves for metal crystals. The face centered-cubic metals have greater hardening characteristics than hexagonal-close-packed group.

**"Strength of single metal crystals
is less than . . . theoretical cal-
culations . . ."**

polyhedron of molybdenum grown in this manner is shown in Fig. 2.

Crystal growth by electrolytic deposition uses a seed crystal in the form of a wire cathode of an electrolytic cell. The anode is a cylindrical sheet of the same material with the cathode as its axis. A suitable electrolyte decomposes under action of an electric current resulting in deposition of metal on the wire cathode. The deposited metal takes the orientation of the wire. Small tungsten single crystals have been grown successfully by this method.

Strength of single metal crystals is less than would be predicted from theoretical calculations, by a factor of at least 1000. Answer to this paradox is believed found in imperfections such as atomic scale dislocations from the ideal positions of the crystalline array of atoms.

Consider the manner by which a metal deforms uninhibited by grain boundaries. When a tensile stress applied to a single crystalline rod reaches a critical value, one part of the metal glides or slips over the other. This slipping occurs along densely populated planes of atoms and in directions with the most closely packed rows.

Under the microscope these slippages appear as lines called glide or slip bands, Fig. 3. The electron microscope shows the distance the metal glides along the plane is about 2000 Angstrom units, about 0.000008 in. In the case of aluminum the spacing between glide planes amounts to about 200 Angstrom units, or 0.0000008 in.

Once slip has occurred along a plane of atoms, the stress necessary to cause further slip both along the same or different planes of the same type increases, i.e., the metal is hardened by plastic deformation. This strain or work hardening, a basic property of metals, is widely used in metalworking. Strength of steel can be increased by a factor of four by previous cold work.

Typical strain hardening curves for metal crystals are shown in Fig. 4. In general, each class of metals, face centered cubic, hexagonal close packed, body centered cubic, has different hardening properties. The face centered cubic metals harden more thoroughly than the hexagonal close packed. Insufficient data are available for the body centered cubic metals, since, until recently, good single crystals of these materials were not readily obtainable.

Temperature affects amount of glide on each slip plane and the number of slip planes acting. The amount of glide on any one plane is much greater at higher temperatures, Figs. 5 and 6. This effect is shown in the curves, Fig. 7. It can be seen from these curves the amount of work hardening is dependent upon temperature.

Research on single crystals of face centered cubic metals has suggested a model for plastic



FIG. 5—Glide bands on a molybdenum single crystal deformed at room temperature. 170X.



FIG. 6—Glide bands on molybdenum crystal deformed at 2000°C. Note amount of glide on slipped planes. 4X.

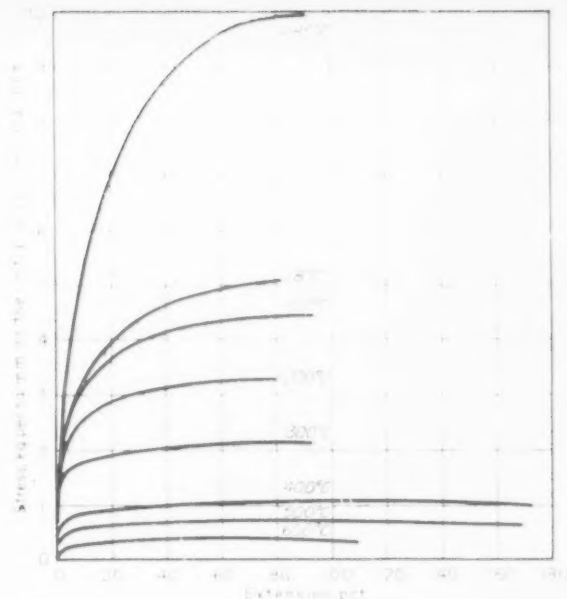


FIG. 7—Dependence of work-hardening on temperature in aluminum as outlined by Schmid and Boas.

deformation. Most past work was performed under static conditions. A crystal of aluminum would be stressed, the load removed, and the crystal examined by microscope and X-ray. A better understanding of how slip lines form however, is being gained by observing slip lines as they form. Recently this technique has been developed and good data are obtainable.*

Deformation of metals in the hexagonal close packed group helps give a clearer understanding of metal deformation generally. Single crystals

* R. B. Pond and N. K. Chen, "Develop New Technique for Metal Structure Study," *The Iron Age*, Aug. 7, 1952, p. 122.

of these metals, zinc, cadmium, magnesium, can be grown easily. The most closely packed plane, the basal plane, contains three possible directions; there are only three systems for slip.

Slip in hexagonal metals can be likened to the shearing of cards in a deck. The plane of slip rotates into alignment with the axis of stress. At a point where the plane of slip is close to the stress axis, as in zinc, the metal twins or shears to realign a slip plane into a more favorable position for further slip. The new plane is in a mirror position with the old. Were it not for this process, the working of industrial zinc, magnesium, etc., would be extremely difficult.

The general behavior of the close packed hexagonal metals with regard to variables such as temperature, strain, rate of strain and orientation is quite similar to the face centered cubic.

Dominant feature here seems to be the nature of the atomic forces existing between planes in the lattice. Recent research on titanium single crystals indicates that a plane, at right angles to the basal, may act as the slip plane.

Theories of deformation on body centered cubic metals such as iron, chromium, vanadium,

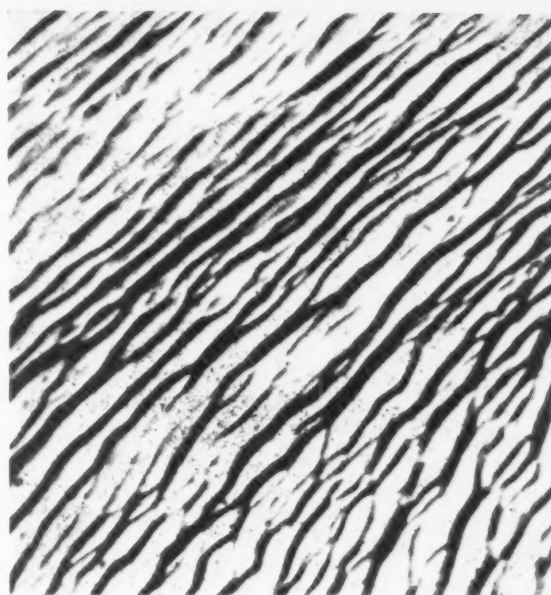


FIG. 8—Wavy slip lines in the deformation of a molybdenum single crystal at room temperature.

molybdenum, tungsten, tantalum, columbium, sodium, are still obscure. While slip lines for the other two classes of metals are generally straight, those of this class are wavy and indistinct, Fig. 8.

Direction of slip, at least in the early stages of deformation is the most closely packed row of atoms. Observation indicates more than one plane acts in close association during the deformation. This is not necessarily true for all metals of this class. Addition of only a few per cent silicon to iron shows the action of only one plane—that of highest atomic density.

Molybdenum crystal highly ductile

An example of the use of single crystals in research deals with one of the problems confronting the use of molybdenum. The industrial aggregate, made from either powder or melted by electric arc, is brittle. A single crystal of molybdenum, however, can be extended 75 pct, rolled 98 pct and bent considerably. An embrittling component is apparently present in the pressed-sintered and arc melted product.

Recent work at Battelle Memorial Institute where great care is taken in either eliminating or diminishing impurities results in polycrystalline molybdenum which is quite ductile.

Data for single crystals cannot, as yet, be applied directly to the polycrystalline aggregate because of factors such as grain boundaries and the need for maintaining contact between grains during flow. The rather "uniform" deformation of the single crystal is replaced by the very inhomogeneous deformation of one grain neighboring other grains of different orientation. A grain with an imbedded second material such as a carbon steel, may have entirely different characteristics of plastic deformation.

How water soluble oils affect CARBIDE MILLING CUTTER LIFE



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Tests on the application of a water soluble oil emulsion to carbide milling of steel by conventional methods indicate they hold no value in prolonging tool life. Four medium-carbon steels with hardnesses of 200, 300 and 400 Bhn were used in the tests. Cutting in still air was found to be superior to cutting with an emulsion. When cutting with emulsion tool failure was of a more objectionable type. Complete flooding of tool and work-piece generally resulted in the worst performance.

CARBIDE face-milling tool life tests on four medium-carbon steels at hardnesses of 200, 300 and 400 Bhn show the use of water soluble oil emulsions as a cutting fluid to be of no value in prolonging tool life. In fact, conventional application of a water soluble oil emulsion actually decreases tool life and provides no improvement in surface finish.

Steels used in the tests were SAE 3140, 4340, 4145 and 4145 sulphurized, see Table I. These were in the form of bars, 1.5 x 6 x 12 in. machined all over in a normalized and annealed condition and heat treated to 200, 300 and 400 Bhn. Test cutters were 3-in. diam right hand face mills with two solid carbide inserted blades. During the test only one blade was acting, the other having been set back. Tool material in all cases was sintered tungsten-titanium carbide. All tests were conducted on a Kearney & Trecker 2K vertical milling machine.

Each grade of steel at various hardnesses was subject to at least three tool-life tests under the following conditions: 1. Conventional

cutting in still air; 2. Cutting with a 3.5-gpm bow of 40:1 water-oil emulsion from one nozzle in the direction of cutter rotation into the clearance space between the blade and the work, Fig. 2; 3. Cutting with a 2-gpm flow of 40:1 emulsion from each of two nozzles, one directed as above, and the other impinging against the front of the blade; 4. Cutting with the cutter and workpiece completely immersed in emulsion, Fig. 3.

Differences in power required to cut the various materials at any given hardness were found to be relatively small. In power tests, cutters removed no more than 0.3 cu. in. of material and thus there was no noticeable change in power due to tool wear since the cutters could be considered essentially sharp¹. Horsepower requirements for all the steels are shown in Fig. 1.

Test bars of 200 and 300 Bhn were face-milled at 430 fpm cutting speed, 0.011 in. per tooth feed, and 0.125 in. depth of cut. At 400 Bhn these feeds and speeds were impractical. It was necessary to reduce cutting speed to 130

fpm and the feed to 0.0045 in. per tooth to obtain acceptable tool life.

Graphical presentations of the tool life results are given for the different hardnesses in Figs. 4, 5 and 6. Since the only variable in Figs. 4 and 5 was hardness, they can be compared directly. They are not directly comparable however, with Fig. 6 since this data was obtained at a reduced speed and feed.

Results for cutting in still air show that generally harder steels should be milled at reduced speeds and feeds in order to obtain satisfactory tool life. Hardness, as observed in Figs. 1, 4, 5 and 6 is only an approximate indicator of machinability. Although an increase in power of only about 10 pct for an increase in hardness from 200 to 300 Bhn is indicated in Fig. 1, Figs. 4 and 5 show decreases in tool life generally from 50 to 250 pct while cutting either in still air or with various methods of applying emulsion. Under the same conditions of feed and speed, 400 Bhn specimens showed an increase in power of about 25 pct over 200 Bhn and had practically zero tool life.

Still air cutting better

In all cases tool life tests at 200, 300 and 400 Bhn showed that cutting in still air was considerably superior to cutting with emulsion regardless of the manner of application. Exceptionally low tool life resulted when the cutter was completely immersed in the emulsion. Results of immersion tests on SAE 4340 (not shown) were practically identical to those obtained with emulsion.

At 200 and 300 Bhn, emulsion from one nozzle with flow directed from behind the blade along the peripheral clearance face toward the cutting edge, was more effective with regard to tool life than any of the other methods of application. At 400 Bhn complete immersion generally permitted better tool life than did a di-

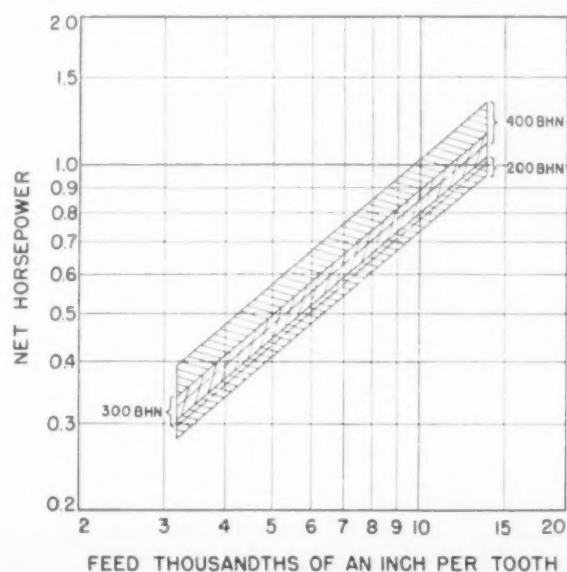


FIG. 1—Hp. requirements for steels of different hardnesses.

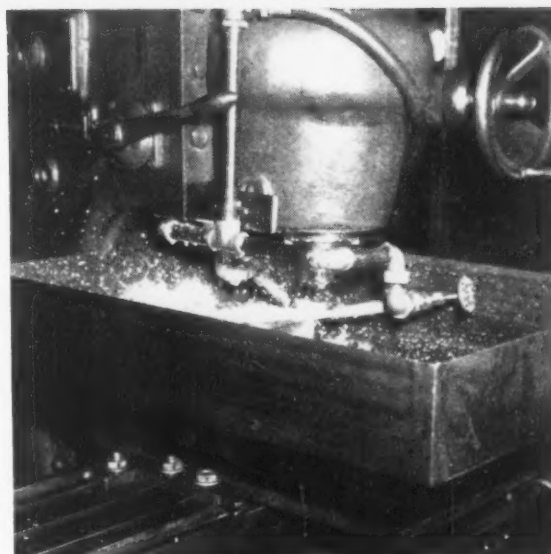


FIG. 2—Tool life test set up with emulsion flowing from one nozzle placed behind blade as it enters workpiece.

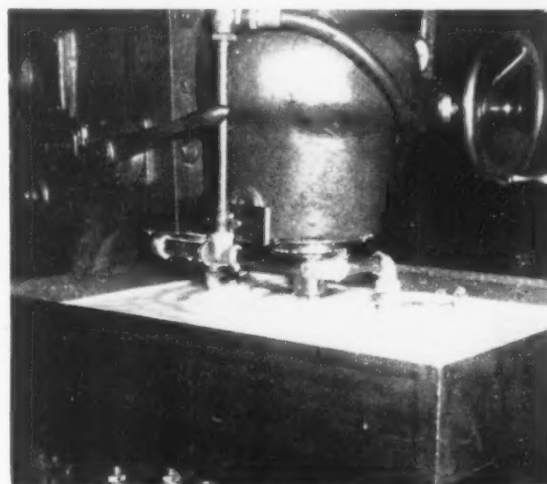


FIG. 3—Tool life test set up with cutter and workpiece completely immersed in the water soluble oil emulsion.

TABLE I

HEAT TREATMENT OF SAE STEEL TEST BARS

Steel	Bhn	Heat Treatment ^a		
		Heat to deg F	Quench	Draw ^b deg F
3142	202	1600	Air	...
3140	311	1550	Oil	950
3140	402	1550	Oil	750
4340	207	1475	Furnace	1225
4340	302	1550	Oil	1125
4340	402	1550	Oil	900
4145	207	1475	Furnace	1225
4145	302	1550	Oil	1075
4145	402	1550	Oil	850
4145 ^c	217	1650 ^d	Furnace ^d	1300 ^d
4145 ^c	302	1550	Oil	1150
4145 ^c	402	1550	Oil	850

^a—All steels were first normalized and annealed.

^b—Cool in furnace for all steels.

^c—Sulphurized.

^d—Isothermic Anneal: Preheat to 1100° F, heat to 1650° F, furnace cool to 1100° F, reheat to 1300° F, furnace cool to 900° F, and cool in air.

"Whenever objectionable failure occurred it was seldom preceded by any forewarning . . ."

rected flow. The ratio of maximum to minimum results in individual tool life tests of a given type was 2 to 1 or less. This ratio of variation is lower than normally encountered in tool life testing.

Contrary to expectations, SAE 4145 with few exceptions gave better tool life than the modified, sulphurized SAE 4145. The sulphurized material used in these tests, despite precautions taken in heat treatment, did not develop the free machining characteristics desired.

Under the most favorable conditions, breakage of carbide blades seldom occurs. Cutting in still air at 200 and 300 Bhn always resulted

could be seen prior to sudden chipping or spalling of the blade material.

Figs. 7 and 8 illustrate the objectionable, expensive to repair type of wear frequently encountered in the tests with emulsion at 300 and 400 Bhn. Fig. 7a shows very slight chipping and wear less than 1/32 in. wide. Fig. 7b shows the spalling which occurred on the same blade after only a few more seconds of cutting under emulsion. In many cases, the small amount of wear shown in Fig. 7a could not be noticed before failure, similar to that in Fig. 7b, occurred.

Besides the short tool life and failure noticed in these tests, visual examination of the workpiece surfaces disclosed no noticeable improvement in finish with the use of an emulsion. These tests indicated that emulsion is detrimental and should not be used in carbide milling of materials used in these tests.

Since in certain cases carbide milling of workpieces at 1500° F has resulted in lower

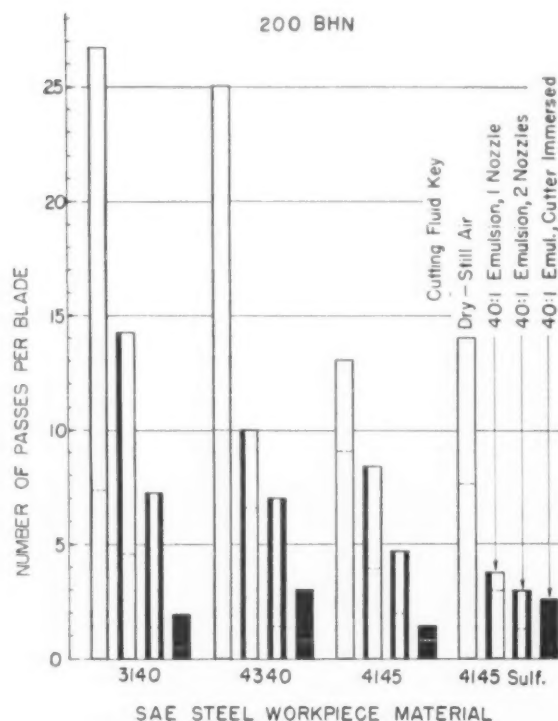


FIG. 4—Average number of passes per carbide blade when face-milling steel of 200 Bhn. Fluid applications varied.

in fairly uniform tool wear of an unobjectionable type. At 400 Bhn, failure was usually objectionable, i.e., requiring more than simple regrinding for reconditioning.² Cutting with emulsion at 200 Bhn resulted in occasional objectionable failures. At 300 and 400 Bhn failure was almost always objectionable when cutting with emulsion, especially in the immersion tests.

Whenever objectionable failure occurred it was seldom preceded by any forewarning. Only minute wear, usually less than 1/64 in. in width,

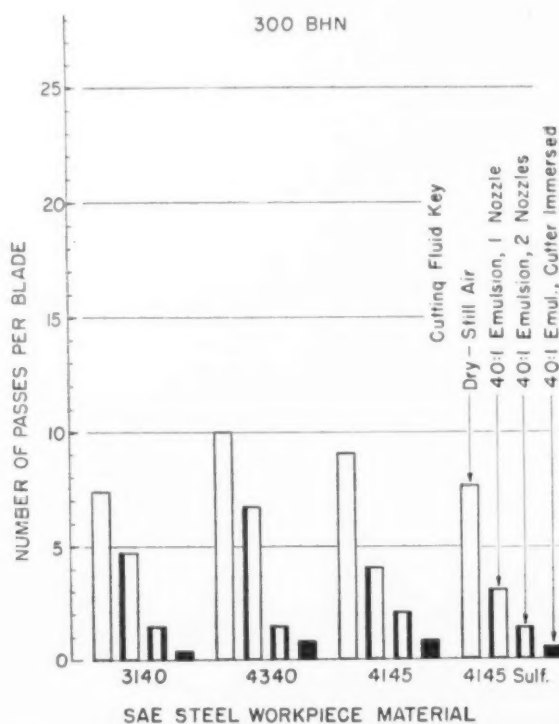


FIG. 5—Average number of passes per carbide blade when face-milling steel of 300 Bhn. Fluid applications varied.

power requirements and increased tool life.³ heat alone would not cause rapid tool failure. However, the rapidly repeated cycle of alternate heating of the blade face, combined with sensitivity of the carbide material to "thermal shock," is undoubtedly a primary reason for the decreased tool life observed with the application of fluid in the carbide milling tests.

The rate of flow for these tests was sufficient to engulf the machining zone at all times. The temperature of the fluid remained practically

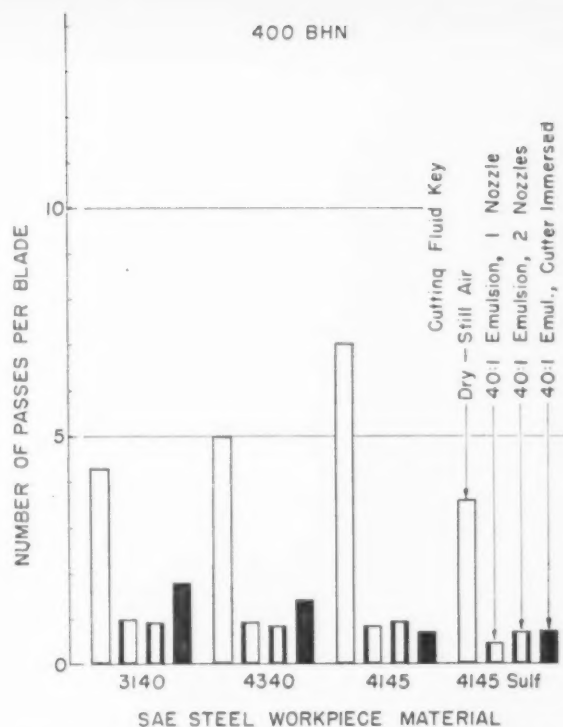


FIG. 6—Average number of passes per carbide blade when face-milling steel of 400 Bhn. Fluid applications varied.

constant at room temperature throughout. No lubricating or friction-reducing effect was in operation.

Results from these tests show that hardness can be taken as a rough guide in establishing preliminary values of cutting speed and feed when production or tool life tests are not available.

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²A. O. Schmidt, "Economy Factors in Carbide Milling," The Iron Age, Vol. 161, May 27, 1948, pp. 72-77.

³A. D. Schmidt and J. R. Roubik, "Milling Hot Work Pieces," The Tool Engineer, Vol. 101, No. 9, Nov. 1, 1949 pp. 29-31, 67.

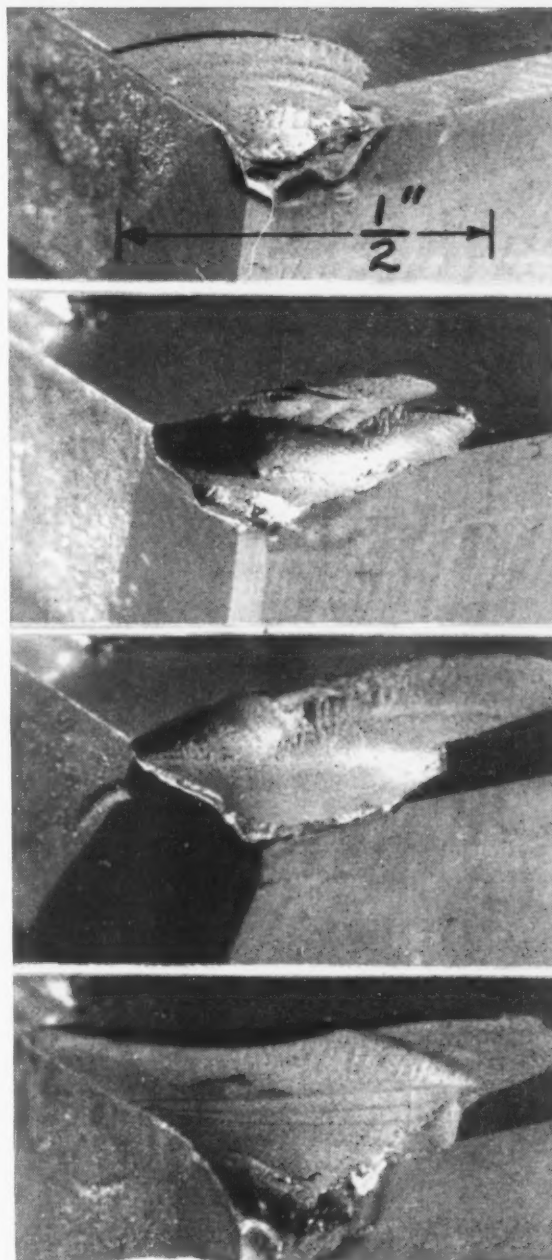
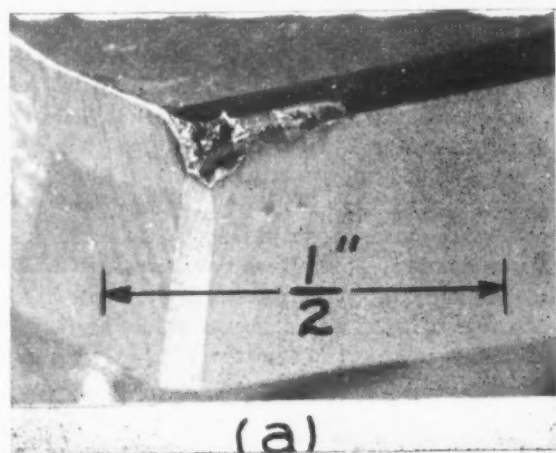


FIG. 8—Typical objectionable spalling of carbide blades occurring with use of emulsion on 300 and 400 Bhn steels.

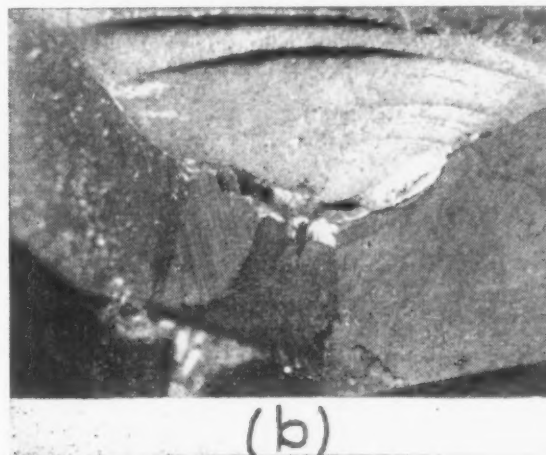


FIG. 7—Typical blade wear when face-milling 300 and 400 Bhn steels completely immersed in emulsion. Top, a, shows slight chipping and little peripheral wear. Bottom, b, same blade after a few more seconds of milling.

Unusual materials handling SPEEDS



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To achieve balanced output of exhaust systems for Pratt and Whitney aircraft engines plus make best use of manpower and machines, Ryan Aeronautical Co., San Diego, Calif., changed from batch to flow production. Look-alike parts of different design were hard to keep track of. By deploying dollies, conveyer tracks, trucks, a merry-go-round, and machines in the right sequence, Ryan came out on top, production-wise.

Sooner or later almost every plant faces the problem of how to get more production from a limited factory area. Increased machine production is often followed by greater difficulties in materials handling, and production imbalance.

Ryan Aeronautical Co., San Diego, Calif., recently raised its sights on production of exhaust systems for R-4360-59 Pratt & Whitney aircraft engines. A change from batch to flow type production, and a more efficient use of manpower and machines helped Ryan meet its production goal. Part quality has improved and employees like the new system.

The new assembly arrangement consists of four adjoining areas. In each, machines and fixtures are located to meet the flow of parts. Custom-made dollies, rolling on continuous floor tracks, carry parts to machines.

Formerly, equipment was spread out to allow batches of parts to be carted to each machine. A

40 pct saving in floor space was realized by grouping jigs and tools along the new tracked conveyer lines.

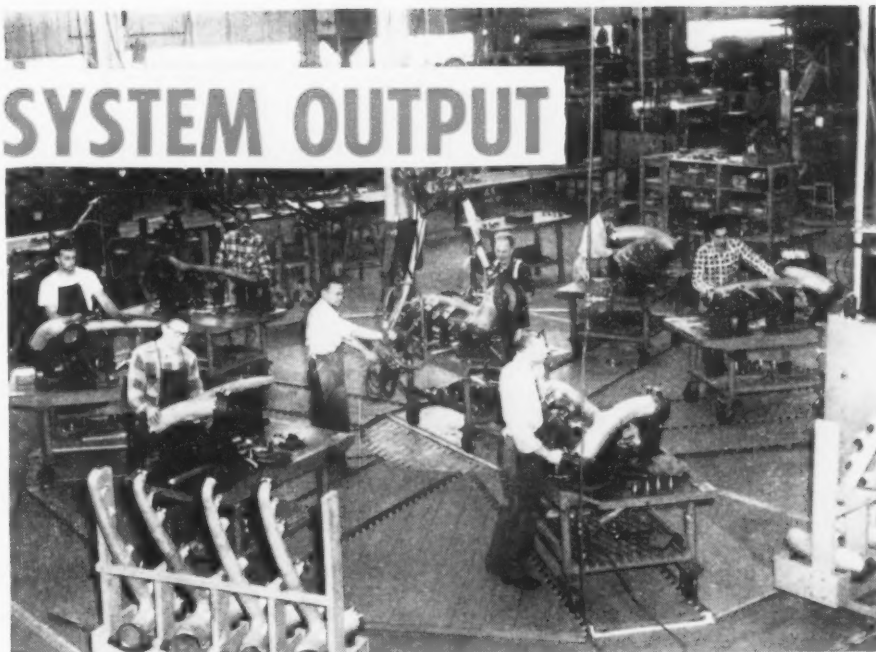
In many ways, the exhaust parts are unique. They are the largest single-piece components used in aircraft exhaust systems and the first in which both header and collector sections are formed as integral units. They require a variety of precise machining operations.

After the exhaust sections have been formed and seam welded, they are loaded into racks adjoining the first area. Here they are fitted with hangers and brackets. Crews feed the parts from seven jigs which fan into a central welding circle.

In area two, parts flow through a series of machines which perform trim, face, burr, sandblast and sizing operations. Conveyer lines circle within the machines.

Area three has seven steel jigs on wheels and tracks converging into a central turn-table or

EXHAUST SYSTEM OUTPUT



STAINLESS STEEL exhaust sections are carefully fitted with flanges and rolled into a central turntable. An overhead spot welding machine, with twin guns, is used to spot weld the flanges. Turntable is swung around to provide maximum access. Jigs are mobile.

merry-go-round. Port and outlet flanges are located and the jigs are rolled onto the turn-table. It is rotated so that an overhead, twin-gun machine can spot weld each flange in place. Conveyor tracks circle outside so jigs can be rolled to the turn-table.

From area three, the parts go to seam welding machines where flanges are permanently welded on. At area four parts are submerged pressure tested, hanger bushings are installed and bushings and brackets are reamed. Finned joint seats are attached to support a capsule-type joint which isolates the exhaust system from engine vibration and provides for thermal expansion.

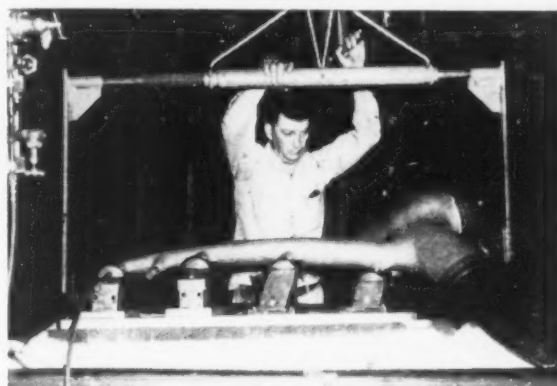
One advantage of the system is the achievement of balanced control of parts and production. Parts consist of seven large, tubular sections of stainless steel. They look alike, yet each is different in design. Together they form a complete exhaust system for an engine of a Boeing C-97 Stratofreighter of KC-97 aerial tanker. Since shipments are made in complete sets, a balanced flow of parts from production lines is desirable.

Under the batch system large numbers of almost indistinguishable components would shuttle between machines. Only a time-consuming segregation and count would have disclosed the relative numbers of each part in production. Now it is always possible to observe the progress and number of parts in each area. All dollies and racks are keyed to specific fixtures and designed to hold a normal day's work.

The method assures more efficient use of man-



CONVEYER DOLLIES, racked with parts, and a line of precision assembly jigs. After being marked, components are trimmed, faced, burred and sandblasted.



UNDERWATER PRESSURE test is given each exhaust section to determine weld soundness.

"Quality has improved . . . Mistakes and defective parts have been minimized . . ."

power and machines. In each area roving crews perform specialized tasks, such as welding. They move from one fixture to another, doing identical types of work on slightly different parts. They are followed by others who perform other specialized jobs. Employees become specialists in skilled tasks and are not required to perform all types of work at a fixed location. The system can be geared to varied rates of production.

Parts quality has improved through greater specialization of labor. Also, parts are moved in contoured, padded dollies instead of bare wooden boxes. Parts moved in a conveyer are properly separated to eliminate damage from jostling.

Mistakes and defective parts have minimized. Because of the assembly sequence, each employee can quickly check on the work of the previous

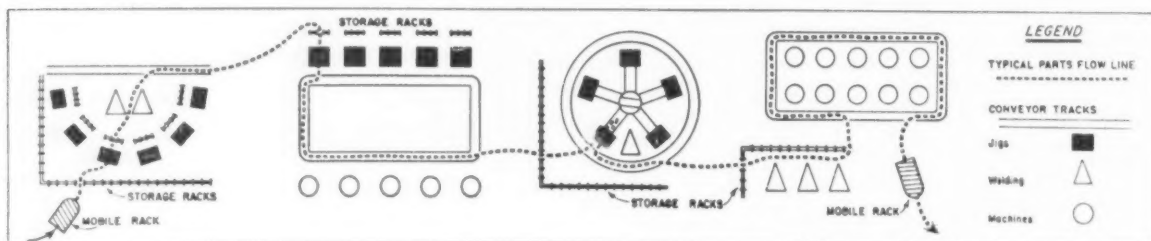


SIZE AND SIMILARITY of components for tubular exhaust systems made parts hard to handle under batch system. Look-alike parts were easily confused.

operator. In case of error, the part is returned to the preceding station.

Operator fatigue is lessened because parts do not have to be constantly loaded and unloaded from boxes.

EXHAUST SYSTEMS for Pratt & Whitney-59 engines are being made by Ryan Aeronautical Co., on flow system. Since parts are shipped in sets of seven, new methods assure balanced production. Diagram outlines parts flow.



NEW BOOKS

"Corrosion Testing Procedures," by F. A. Champion. Designed for the investigator, the text has been divided into five major sections. These include: Choice and preparation of metal and corrosive; metal exposure; cleaning specimens for examination; examination and measurement of corrosion effects; interpretation of results. Of special interest are the extensive references included. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. \$6.25. 369 p.

"Electrolytic Manganese And Its Alloys," by Reginald S. Dean. A new industry, production of electromanganese, was born about 1936. Since then, production of this high purity product has leaped ahead. One of the most plentiful nonferrous heavy metals, it can also be the least costly. It has gained acceptance by industry as a supplement to our supplies of copper, nickel and zinc. Its future position may well be that of a major metal. The Ronald Press Co., 15 E. 26th St., New York 10. \$12. 257 p.

"The Development of Executive Talent," by M. Joseph Dooher and Vivienne Marquis. The authors present an authoritative guide for the building of executive talent within the business organization. Policy, planning, approach, techniques, follow-up, counseling, evaluation, and trends in management development are established. These are backed up with illustrative case studies. American Management Assn., 330 West 42nd St., New York 36. \$6.75. 575 p.

"Lead In Modern Industry." The widely varied uses of lead in today's industry are catalogued and described in this comprehensive text. Lead is one of the oldest metals known to man, with the earliest known specimen dating from 3000 BC. Today it finds wide use in transportation, communications, plumbing, X-ray. Big field, and growing bigger, are the many lead derivatives used in modern chemistry. Lead Industries Assn., 420 Lexington Ave., New York 17, \$1.50. 230 p.

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October 23, 1952

WHAT'S THE FASTEST
WAY TO CLEAN METAL?

See page 11

WHAT'S THE MOST
ECONOMICAL WAY?

See page 9



This FREE booklet on Metal Cleaning helps you get better production, larger profits. Among its subjects are:

- | | |
|---------------------|-----------------|
| Machine cleaning | Tank cleaning |
| Electrocleaning | Pickling |
| Pre-paint treatment | Burnishing |
| Steam-gun cleaning | Rust prevention |

FREE Write Oakite Products, Inc., 30H Thames St., New York 6, N. Y., for the 44-page booklet: "Some good things to know about Metal Cleaning."

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

WHAT'S
THE BEST WAY TO
STRIP PAINT FROM
METAL PARTS
TOO LARGE TO BE
SOAKED IN TANKS?

See page 3



This FREE booklet on Paint Stripping helps you plan better procedures. Read more about:

- How to strip large areas of structural metal? See page 5.
- How to strip metal parts in large volume? See page 9.
- How to strip oil-base paints? synthetic enamels? lacquers? alkyds? phenolics? ureas? See page 12.

FREE Write Oakite Products, Inc., 30H Rector St., New York 6, N. Y., for this 14-page booklet: "How to Strip Paint."

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in
Principal Cities of United States and Canada

MATERIALS HANDLING:

Foundry handling costs cut with wider use of industrial trucks.

Mechanized handling with fork trucks has permitted substantial annual reductions in costs at the Trafford Pa., foundry of the Westinghouse Electric Co. Used often in actual foundry production, trucks are of primary importance in all



DETACHABLE DRUM SHOES simplify handling of barrels at Trafford plant.

supporting phases of the operation. Loading and unloading bagged material, handling barrels and storing patterns—all done manually in the past—are now accomplished rapidly and efficiently.

A switch from manual to mechanical handling of materials resulted in a substantial saving in warehouse labor, and increased storage capacity. This was made possible by ability to stack palletized material right up to the rafters.

Less Damage—Indirect benefits—less damage to stored materials, improved housekeeping, fewer lifting accidents—are difficult to measure in dollars and cents, but just as important to the foundry operation.

Formerly, the patterns were stored without pallets. Patterns were wrestled on and off carts, then placed them in position by standing them on end. Larger patterns were loaded onto carts by an overhead crane.

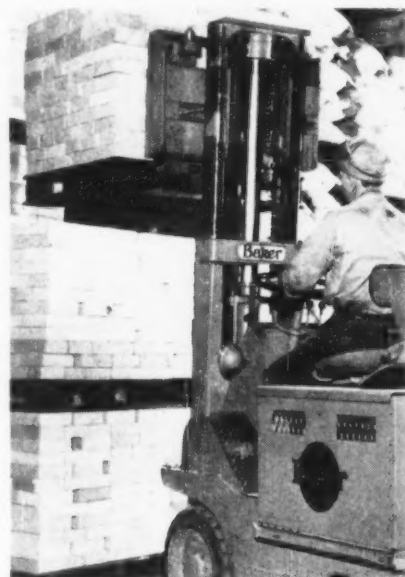
IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 75. Just indicate the subject heading and the page on which it appears.

Problems—Manual handling of patterns, invited accidents. At the same time, storage of these patterns took up too much room. Travel time and manhours involved in hauling the patterns could be cut drastically by putting trucks on the job.

Now patterns are lifted, transported and tied in racks by industrial trucks. Patterns last longer due to more careful handling. Storage capacity has been increased 500 pct by using all available floor space and higher stacking methods. Mechanized handling of patterns has cut labor costs.

Bag packed ingredients such as wood flour, and refractory bricks are handled on pallets. Drums are handled with a detachable drum shoe.



BIG SAVINGS in handling of foundry materials at Westinghouse plant in Trafford, Pa., have been made possible through wider use of Baker industrial trucks. Palletized bricks handle easily, result in fewer broken bricks.

ELECTRONIC CORES:

New standards correlate makers' codes with basic materials.

Users of electronic cores, long faced with the time-consuming problem of correlating core manufacturers' designations with basic materials used in their manufacture, have help at last.

Publication of a Data Sheet prepared by the Electronic Core Standards Subcommittee of the Metal Powder Assn. has virtually eliminated this problem. Designated "M. P. A. Data Sheet No. 1, Revised," the sheet cross-references designations of the basic electronic core materials with the corresponding designations of the leading core manufacturers.

At A Glance—It is now possible to determine at a glance who makes cores from any of 42 different basic materials; what their core designation is; and what corresponding designations are used by other core makers. Data Sheet is available free of charge from the Metal Powder Assn., 420 Lexington Ave., New York 17.

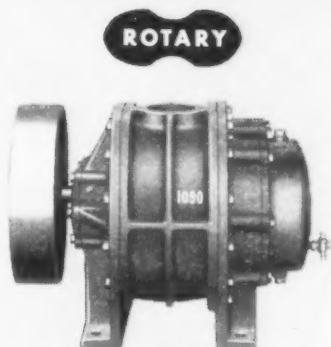


PROTECTIVE COATING is easily applied to big boom section at Thew Shovel Co. paint shop, Lorain, Ohio. Units are sand-blasted before painting to provide clean surface. Paint is then applied and booms are thoroughly dried to allow oil to set. Rust-Oleum coating, mixture of refined menhaden fish oil and pigment, penetrates metal pores and protects metal from damage by weather, salt air, alkalis.

Turn to Page 124

October 23, 1952

For 10 CFM or 100,000 CFM ...compare blower values



Typical low-capacity R-C Rotary Positive Blower. Sizes range from 5 cfm to 50,000 cfm, permitting selection closely matched to needs.

- ☐ Choice of Rotary or Centrifugal
- ☐ Capacity matched to the job
- ☐ Easy accessibility
- ☐ Ruggedness
- ☐ Ease of installation
- ☐ Ability to handle overloads
- ☐ Long-time durability
- ☐ Freedom from breakdowns
- ☐ Low maintenance costs
- ☐ Engineering assistance
- ☐ Proved reputation of maker
- ☐ Customer satisfaction

No need to take chances when buying blowers, exhausters or gas pumps. Just put this "detector test" to work on your specific problem and you'll arrive at the most satisfactory answer.

For instance, if you're debating between Rotary Positives and Centrifugals, remember that only Roots-Connorsville builds both—the exclusive *dual-ability line* that permits unbiased recommendations. Their wide range of capacities supplies sizes and types that are quite likely to be most closely matched to your needs.

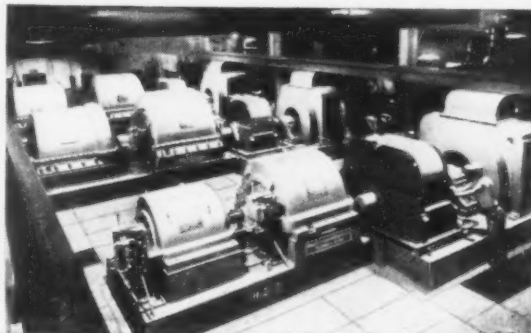
For economy of operation, reliability and low maintenance, we refer you to a list of users that dates back almost a century. If you'll rate your possible choices on a performance basis, you'll usually find R-C equipment "tops" on the list.

To help you make the most profitable, practical decision, our experience is at your service.

ROOTS-CONNERSVILLE BLOWER CORPORATION
525 Ohio Avenue, Connorsville, Indiana



Six R-C Multi-Stage Centrifugal Blowers equipped with automatic regulators to provide extremely wide range of operation at various pressures and capacities.



ROOTS-CONNERSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.

REG. U.S. PAT. OFF.



NEW CORROSION INHIBITOR **STOPS RUST** **...CUTS COSTS**

If you make—ship—or store metal parts
that rust can damage ...

HERE'S IMPORTANT NEWS

New Shell "VPI" is effective in even the most difficult cases of rust prevention—and it's easy to use, too. "VPI" is a volatile corrosion inhibitor which comes in both crystal and paper wrap form.

Whenever moisture is in air,

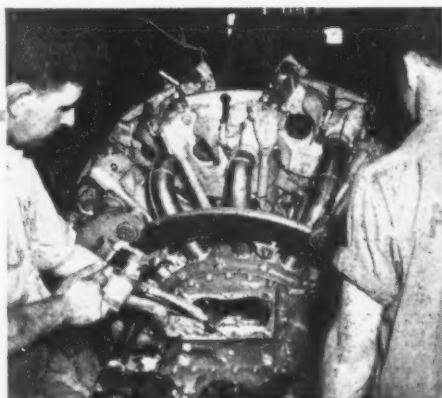
"VPI" vaporizes and makes air noncorrosive. "VPI" is applied quickly... containers do not have to be airtight. Container costs are reduced. Handling costs are lower because there's no greasing and degreasing... no need

for expensive rust-removal jobs after part is unpacked.

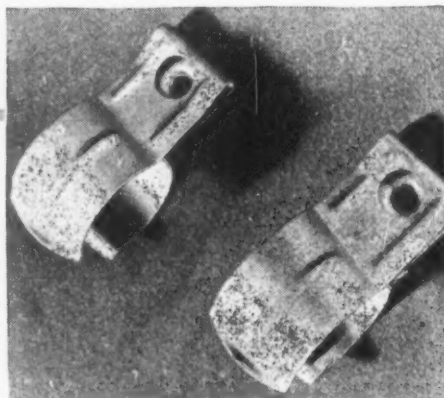
Your Shell Representative can give you more information about the "VPI" method of rust prevention. Call him today. Or write to nearest address listed below.

SHELL OIL COMPANY

50 West 50th Street, N. Y. 20, N. Y.
100 Bush Street, San Francisco 6, Calif.



"VPI" can be used many ways. The photo at the left shows powder being blown into critical areas of aircraft engines to prevent corrosion during storage. Photo at right shows identical spring clips stored



3 weeks in an open box. The upper clip was first sprayed with 4% "VPI" solution. Note that the "VPI"-treated clip suffered none of the rusting which is apparent on the lower clip.



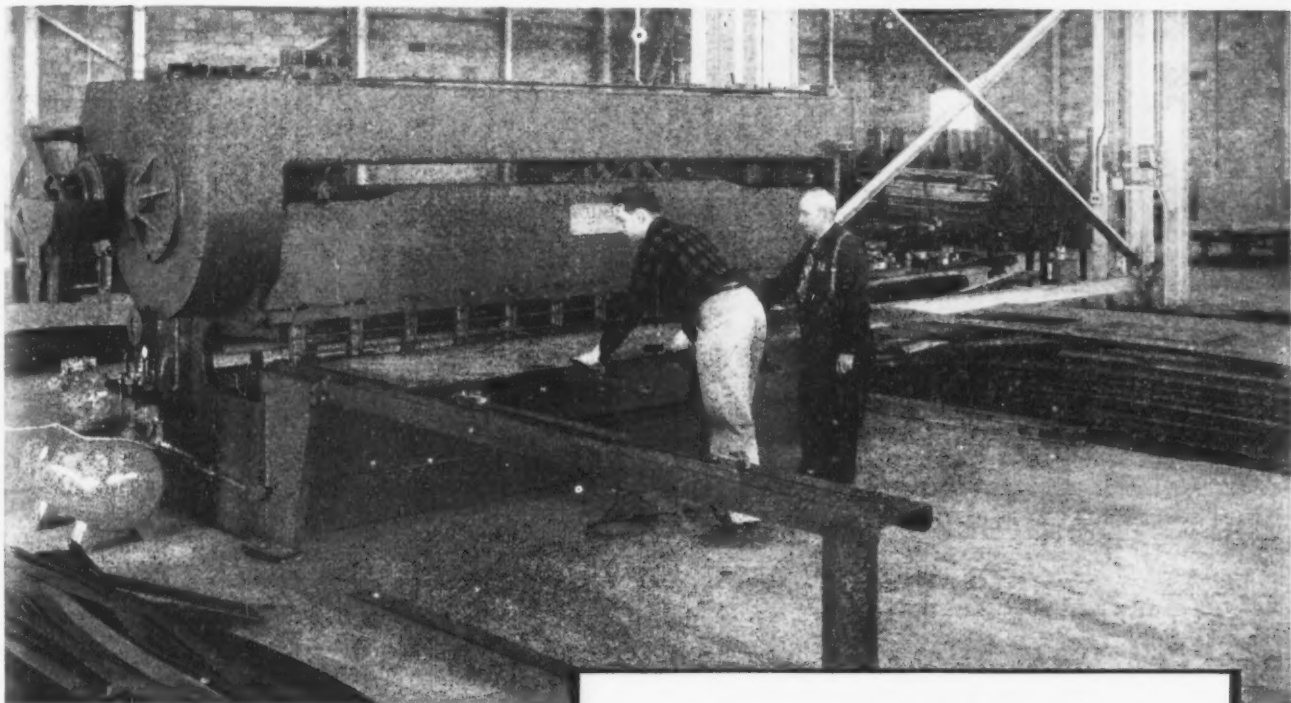
VPI

(a volatile
corrosion
inhibitor)

stops air and
moisture from
making rust.

Series No. 4812 Steelweld Shear. With more than a half century of experience in steel warehousing, Enos & Sanderson know what good shearing is.

They are proud of this machine. They advertise that: "Trained shearing teams will give you the finest edge ever cut with this Steelweld".



Enos & Sanderson's new
35,000 sq. ft. steel warehouse



"NEVER SEEN A SMOOTHER OPERATING SHEAR"

**Steel Warehouse Elated
with Steelweld Shear**

For 57 years The Enos & Sanderson Company, Buffalo, N. Y. has been supplying steel sheets and plates to hundreds of Niagara Frontier factories. Recently they installed a Steelweld Shear in their new warehouse. This is used for cutting various thicknesses to 1/4" x 12', as per customer orders. Cuts must be smooth, straight and accurate. Speed is essential to provide best service possible.

The following paragraph in an unsolicited letter from Enos & Sanderson indicates how well their Steelweld Shear is serving their needs:

"We are extremely satisfied with the operation of this unit and would recommend this machine highly to anyone. A rigger, who set up this shear for operation, remarked that, in his twenty-five years of work with shears of all types, he had never seen a smoother operating shear in his experience."



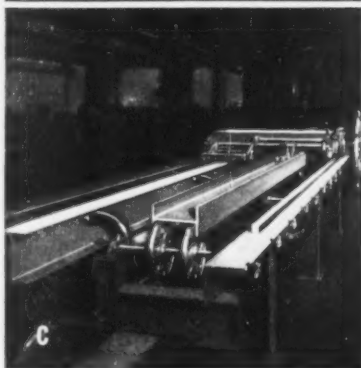
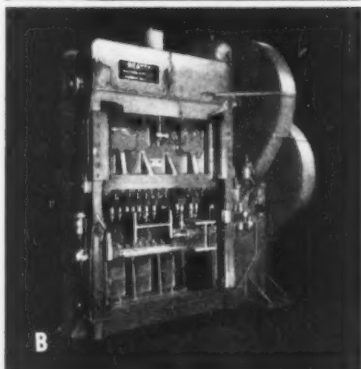
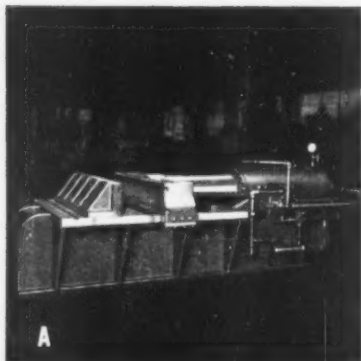
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CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.

4835 East 282nd St., Wickliffe, Ohio

STEELWELD PIVOTED BLADE SHEARS



A. BEATTY Horizontal Hydraulic Bulldozer for heavy forming, flanging and bending.

B. BEATTY Guillotine Beam Punch. Punches webs and flanges in "I" beams from 6 to 30 inches.

C. BEATTY Spacing Table handles web and flange punching without roll adjustment.

D. BEATTY Gap Type Press for forming, bending, flanging, pressing. Capacity 250 tons.

E. BEATTY Guillotine Bar Shear for angles, bars, rounds, squares without changing tools.

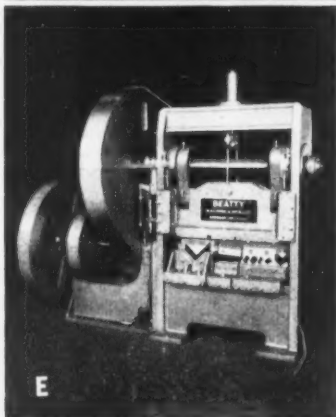
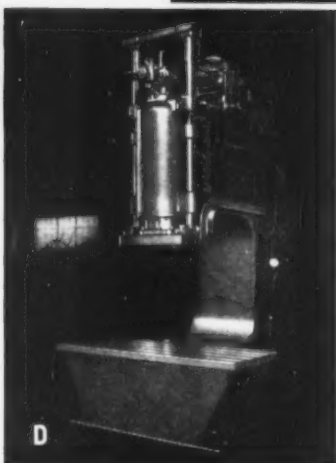
MATCH-MAKERS



BEATTY specializes in making machines to match various heavy metal working conditions and problems. If one of the machines shown can't be modified to suit your needs, we'll design and build one that does. Broad experience in varied metal working fields has taught us that there is always a better way to solve production problems. Let one of our engineers show you how the BEATTY way is a BETTER way to increased production and economy.

BEATTY

MACHINE & MFG. CO.
HAMMOND • INDIANA



Technical Briefs

TUBE STRAIGHTENER:

Rotary machine helps solve production headache.

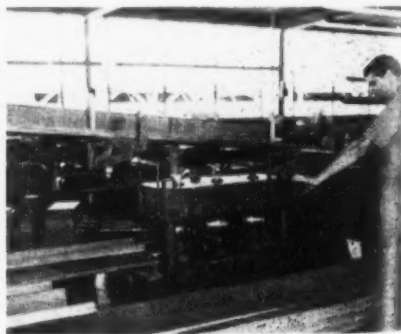
Straightening new types of alloy steel tubing with high corrosion and high temperature resistance, plus the everyday job of straightening a growing volume of stainless tubing proved a major production headache last year for Tube Methods, Inc., Bridgeport, Pa.

Both problems were successfully solved by the installation and operation of a Mackintosh-Hemphill rotary 4-speed drive straightener.

Growing—Expanding plant production was paced to the new machine without shifting from the initial low speed setting. A monthly average of 400,000 ft of tubing has been straightened, with a peak at 525,000 ft.

Special composition tubing, annealed within 100° F of the metal's melting point, offers far more resistance to straightening than stainless steels and other metals. The new straightener handles special alloy tubing up to 78 in. in diam with walls as heavy as 0.095 in.; in 20-ft lengths, and at a speed averaging 150 fpm.

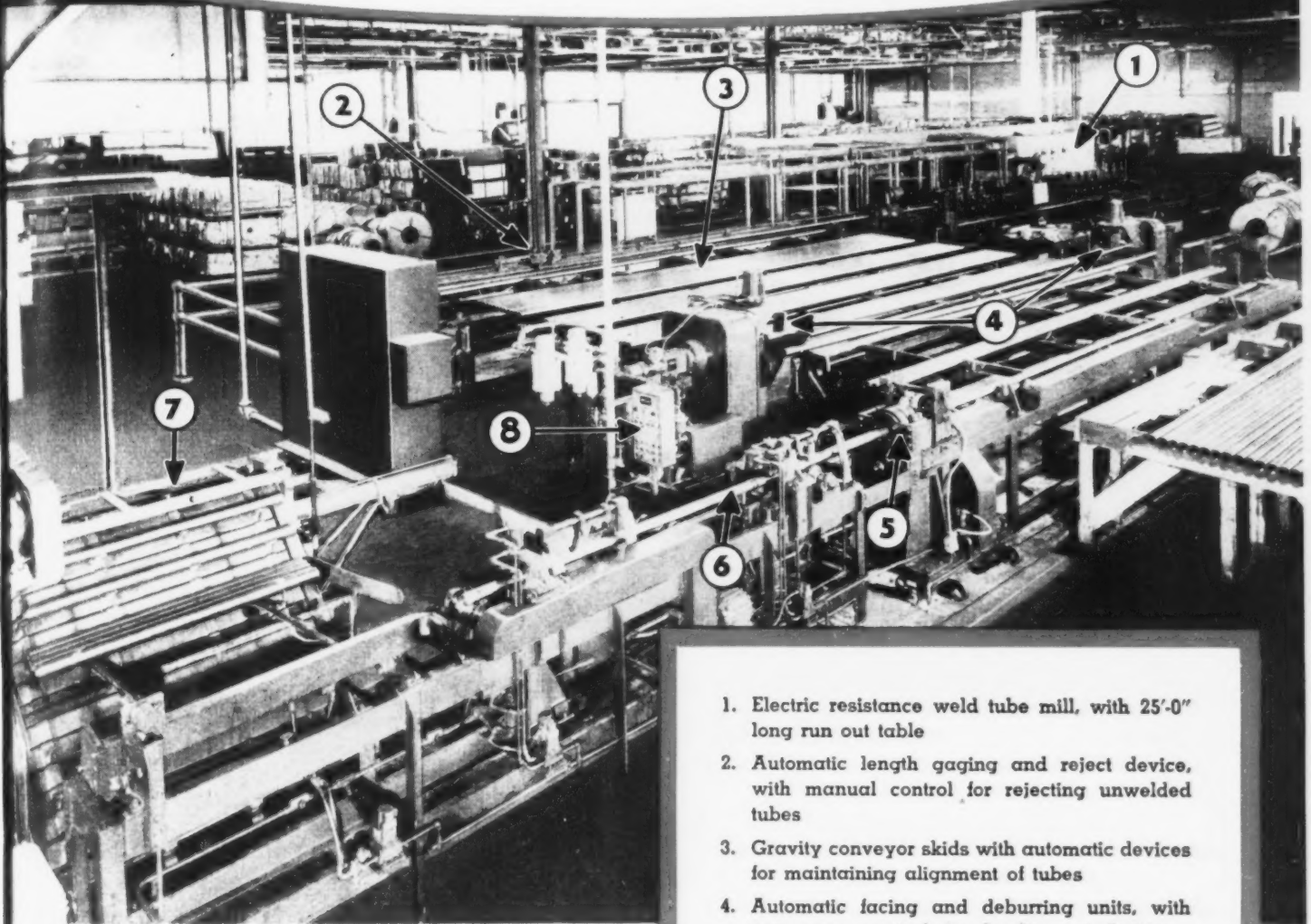
Tolerances Close—Most of the stainless steel tube straightened on the Mackintosh-Hemphill machine varies between 0.1875 and 0.625 in. Certain tubing used in reciprocating and jet aircraft engines is 1.1875 in. OD, with 0.032 in. wall thickness is produced.



NEW HIGHS in production straightening of stainless and other high alloy steel tubing were attained when Tube Methods of Bridgeport, Pa., installed 4-drive rotary straightener.

Turn Page

Special **DUNCAN-McKAY** *Completely Automatic Cut-up Line* **FOR TUBE FINISHING OPERATIONS**



1. Electric resistance weld tube mill, with 25'-0" long run out table
2. Automatic length gaging and reject device, with manual control for rejecting unwelded tubes
3. Gravity conveyor skids with automatic devices for maintaining alignment of tubes
4. Automatic facing and deburring units, with sequence control for loading—indexing—clamping—cutting and unloading tubes
5. Duncan-McKay automatic tube cutoff with magnetic conveyor rolls—positive hydraulic feed and hydraulic torque converter drive for the cutting head
6. Mandrel end—with automatic length gage—magnetic exit conveyor and automatic dumping device
7. Automatic exit conveyor for cut length tubes
8. Operating control station with push button control of all automatic functions.

Finishing and cutoff operations have always proved to be a bottleneck in tube production. The McKay Automatic Cutup Line at Ford's Mound Road, Detroit Plant, provides complete automatic control of length gaging—facing—chamfering and cut to length operations for Ford's rear axle and torque tube requirements. Ford's policy of "Automation wherever Practical" really pays off here with increased production—closer tolerance control—less scrap loss and reduced cost per piece.

If you have a similar problem, contact McKay engineers.

ENGINEERS AND DESIGNERS OF
EQUIPMENT FOR THE AUTOMOTIVE,
FABRICATING AND STEEL INDUSTRIE

M^cK

McKAY MACHINE Company

If you buy Cutting Tools



Tool Bits

Ground Cutoff Blades



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"M-40-U" Alloy Centers



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Rolls & Slitters

HERE'S HELP FOR YOU!

Are you responsible for purchase or specification of cutting tools—or wear and abrasion-resistant parts? You'll find the *Gorham Tool Catalog* a *helpful time saver!* 120 pages, packed with useful information, describe and illustrate the complete *Gorham* line—**PLUS** an informative section of Engineering Data. Request your free copy on company letterhead.

We also offer the service of *Gorham* field engineers, whose counsel in specification and design for special tooling problems is yours for the asking. Their recommendations are backed by *Gorham's* 25-year background in tool design, manufacture and heat treatment. Write for the name of your nearby *Gorham* representative.

Gorham
TOOL COMPANY

14113 WOODROW WILSON
DETROIT 3 MICHIGAN

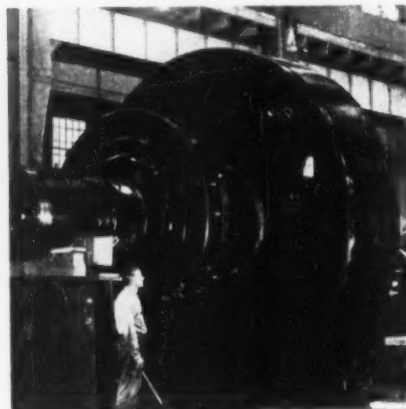
—Technical Briefs—

BIG SHRINK:

Giant 60-ton rotor shrink assembled on shaft for 3500 hp motor.

One of the largest shrinkage assemblies on record, has been turned out at the Midvale Co. at its Nicetown, Philadelphia plant.

The tricky operation required heating the 14½ ft diam rotor to a predetermined temperature to



BIG ROTOR AND SHAFT of 3500 hp drive motor for spreader stands on 80-in. hot strip mill at Fairless Works, is one of biggest shrink assemblies on record.

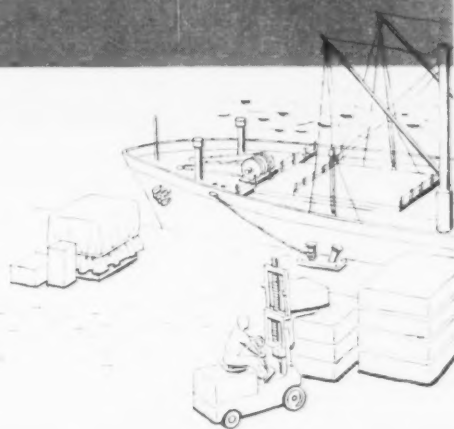
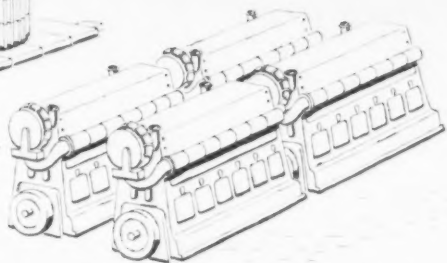
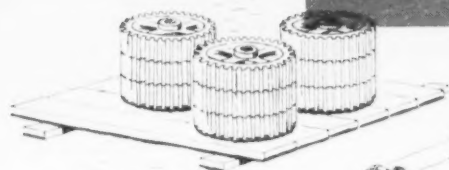
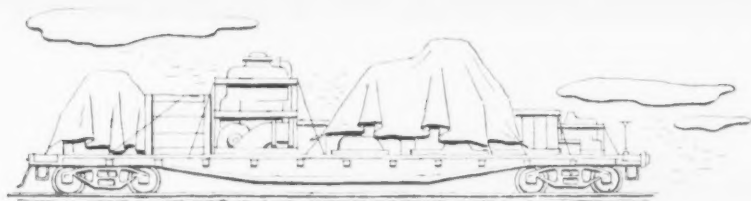
obtain an expansion of 0.050 in. and setting the rotor down on the shaft to an exacting tolerance. The assembly weighed 60 tons. Overall length of the assembly is 25 ft.

Allis-Chalmers made the unit, an armature for a 3500 hp drive motor for the spreader-stands on the 80-in. hot strip mill at Fairless Works, U. S. Steel Corp., Morrisville, Pa.

Turn Page



There, maybe now we'll have a 100% attendance at the Christmas party.



Gulf offers a complete line of *Quality Rust Preventives*

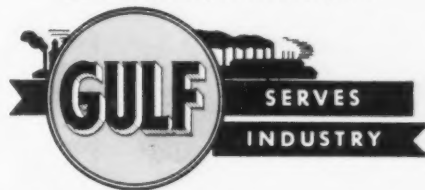
**a type for every duty,
protection against all exposures**

FROM the complete Gulf line of quality rust preventives, you can select the proper coatings to fit the desired methods of application, types of metal, length of time for which protection is required, conditions of storage or shipment, and ease of removal.

Gulf makes available both oil- and petrolatum-type rust preventives for both interior and exterior use—including the well known Gulf No-Rust C (polar type) which displaces residual moisture on metal surfaces and lays down a protective coating; and Gulf-No-Rust Engine Oils, which prevent corrosion caused by products of combustion left in internal combustion engines.

A Gulf Sales or Staff Engineer will be glad to co-operate with you in the solution of your corrosion problems. Write, wire, or phone today.

Gulf Oil Corporation • Gulf Refining Company
GULF BUILDING, PITTSBURGH, PA.



Gulf Oil Corporation • Gulf Refining Company
719 Gulf Building, Pittsburgh 30, Pa.

IA

Please send me, without obligation, a copy of your pamphlet "Gulf Rust Preventives."

Name.....

Company.....

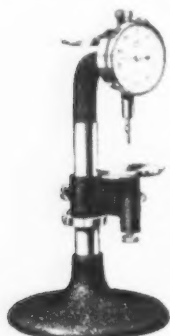
Title.....

Address.....

FOR *Strictly* IMPERSONAL INSPECTION CHOOSE **AMES** DIAL COMPARATORS

Ames Dial Comparators make the inspection of duplicate parts an extremely simple, rapid and accurate operation. Ames Comparators are strictly impersonal in their accuracy — the results being in no way dependent on the skill or judgment of the operator. The pressure of the gauging members against the work is mechanically determined and therefore uniform.

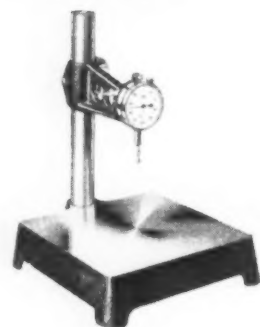
Check the Ames Dial Comparators shown — one of them may solve a Quality Control problem for you.



Ames No. 1 Dial Comparator is an easily adjustable bench model that measures objects up to 2" in cross section. The table bracket may be quickly located and locked in position on the column. The table itself may be further positioned and locked for final fine adjustment. This comparator is designated *Ames No. 1W* when equipped with dead-weight contact pressure and contact area to ASTM specifications for measuring resilient materials, such as rubber, plastics, etc.



Ames No. 2 Dial Comparator is a compact, stable bench model for measuring non-yielding materials — sheet metal, glass, hard rubber. The 2" diameter table is adjustable to bring pointer to zero. *Ames No. 2W* is similar to the Ames No. 2, but is furnished with dead-weight contact pressure and contact areas to ASTM specifications for checking textiles, plastics, sheet rubber, etc.



Ames No. 13 Dial Comparator features flat-ground, cast-iron base of ample size for using V-blocks and locating fixtures for checking rounds, flats and odd shapes. Also, the No. 13 can be fitted with a fine adjustment for close setting. Accurately adjustable bracket holds any Ames Micrometer Dial Indicator.



Ames No. 130 Dial Comparator is designed especially for inspecting comparatively large parts. For this reason, the flat-ground steel base, the adjustable indicator support on which can be mounted any Ames Micrometer Dial Indicator, and the upright column are proportioned to suit the user's particular requirements.

Send us your Quality Control job specifications, and we will supply complete details and proposal without obligation.

Representatives in
principal cities.

B. C. AMES CO.

25 Ames Street
Waltham 54, Mass.

Mfgr. of Micrometer Dial Gauges • Micrometer Dial Indicators

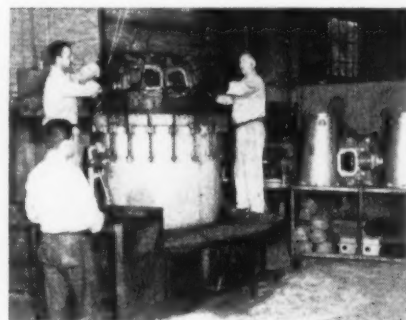
— Technical Briefs —

IMPREGNATION:

Antidote for microporosity permits salvage of rejected castings.

Salvage of castings rejected for microporosity can be done on a production basis through combination of new sealing materials and impregnation methods. Almost total filling of microporous voids is reported possible.

Previous attempts at "sealing"



FEWER REJECTS of castings for microporosity follow impregnation with new sealing materials. Vacuum and pressure methods are used to fill tiny voids with sealant.

with various pastes or combinations of inorganic materials and vegetable oils have given spotty results. A study of currently available sealants by engineers of Polyplastex International, Inc. indicated that they were all of a low solids type, with 50 to 70 pct volatile content. This resulted in low sealing efficiency.

More Solid Needed—Polyplastex developed a method using a 100 pct solids sealant.

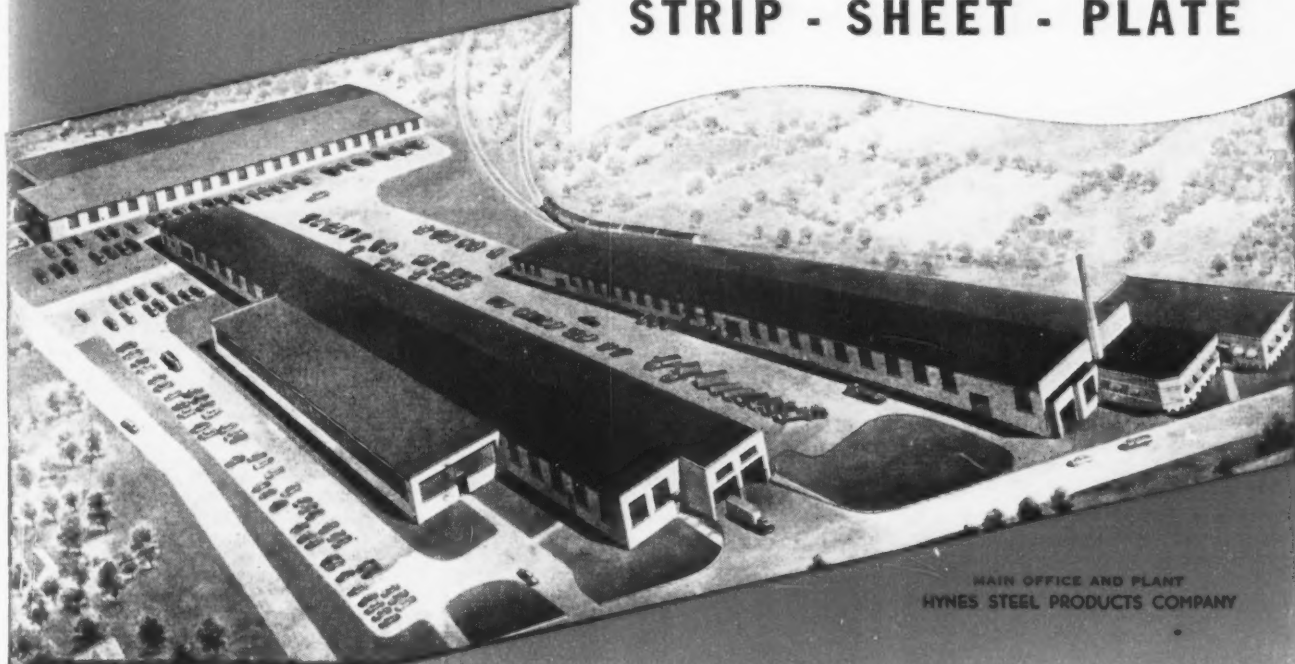
The process uses a thermosetting resin known as Polyplastex MC. All the sealant converts into a solid of excellent physical and chemical properties. When the liquid resin fills all of the pores, it occupies the same volume after it becomes solid.

Resistant — The impregnating resin is resistant to a wide variety of solvents, water, salts, hydrocarbons and glycols, as well as acids and weak alkalis. The cured resin can withstand continuous exposure to temperatures up to 350 F. Although hard, the resin is resilient enough to permit expansion and contraction of the metal due to temperature variations.

Turn Page

HYNES STEEL

for WAREHOUSE STEEL STRIP - SHEET - PLATE



MAIN OFFICE AND PLANT
HYNES STEEL PRODUCTS COMPANY

HOT ROLLED, PICKLED & OILED
& COLD ROLLED STRIP STEEL

SIZE RANGE

Slit Edge-Coils

11 ga. (.125) to 28 ga. (.015)
1/4" to 24" wide

Slit Edge-Cut Lengths

7 ga. (.187) to 26 ga. (.018)
3/4" to 24" wide

Round Edge-Coils or Cut Lengths

11 ga. (.125) to 16 ga. (.062)
3/8" to 3" wide

Deburred Edge-Coils or Cut Lengths

11 ga. (.125) to 24 ga. (.025)
3/8" to 3" wide

Shearing Sheets and Plates

up to 3/8" in thickness — 12' lengths

Our complete facilities are devoted to the warehousing and processing of steel in sheet, strip and plates.

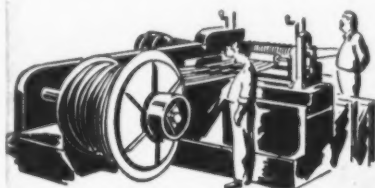
Hynes has the most modern equipment for shearing, slitting, edge rolling, roller leveling and cutting to length.

Normal inventory includes Cold Rolled Strip and Hot Rolled Strip in Coils and Cut Lengths, Hot Rolled and Cold Rolled Sheets and Hot Rolled Plates.

Non-ferrous metals can be processed to your size and specification.

Twenty-six years of progressive growth and experience is at your service.

Check now on our warehouse stock. Phone, wire or write.



HYNES

STEEL PRODUCTS COMPANY

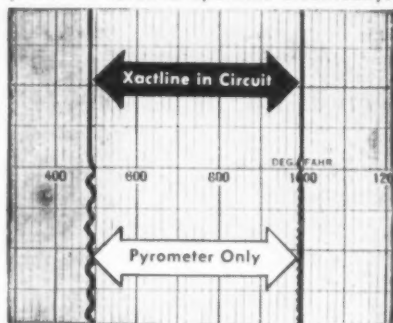
OAKWOOD AVENUE - P. O. BOX 818

YOUNGSTOWN 1, OHIO PHONE 9-3335



Are you going to continue to put up with that troublesome overshooting and undershooting inherent in your conventional pyrometer control—especially when it is so easy to eliminate that saw-tooth effect?

Put XACTLINE in the control circuit. XACTLINE anticipates the temperature changes—before they occur. And too, it nullifies the varying amounts of thermal lag, residual heat, and mechanical lag—producing a short on-off cycle resulting in "Straight-Line" temperature control. This performance is possible because there is no dependence upon mechanical parts—XACTLINE operates electrically.



Exact reproduction of temperature chart for a heating process showing the comparison of the "Straight-Line" temperature control produced by XACTLINE and the saw-tooth curve obtained with only conventional control.

XACTLINE is applicable to any indicating or recording pyrometer control of the millivoltmeter or potentiometer type. It should be used wherever close temperature control is required—any type of electrically heated oven, furnace, kiln, injection molding machine, and fuel-fired furnaces equipped with motor-operated or solenoid valves.

XACTLINE is a complete unit. No adjustment or coordination with the control instrument is required regardless of the size of the furnace, length of the heating cycle, or size of the load. Installation is very simple—can be either flush or surface mounted.

PRICE **\$89.50** F.O.B. CHICAGO
Nothing else to Buy

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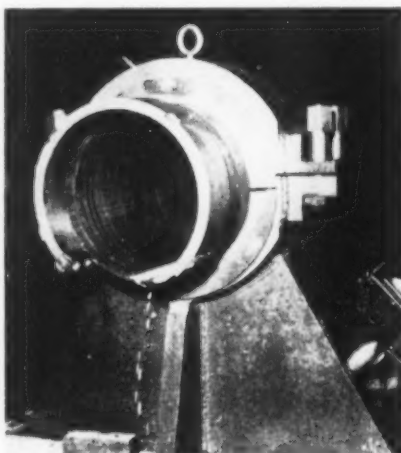
Technical Briefs

TREPPANNING:

Impressive reduction in machining time reported with carbides.

Production increases to 1000 pct have been found possible in trepanning operations on forged steel workpieces where cemented tungsten carbide tools are used in place of other cutting tools.

Forged steel line shafts, 9 $\frac{3}{4}$ ft long, are being trepanned with a



EIGHT FEET PER HOUR is the cutting rate in trepanning operation through 30-ft long forged steel line shaft. Operation is done on converted Niles boring lathe at 250 rpm and 0.006 in. feed. Carbide cutter used in place of HSS spade drill helped cut machining time from 90 hr to 8 hr.

tungsten carbide triple edge tool mounted in a 4 $\frac{1}{2}$ -in. diam trepanning head. Operating at 250 rpm and 0.006-in. feed, this tool cuts a 4 $\frac{1}{2}$ -in. diam hole at a rate of 8 ft per hour on a converted 50-hp Niles boring lathe.

Half Way—A 30-ft line shaft is bored half way through, then reversed and bored from the other end. After each 15-ft penetration, the trepanning tool is reground to assure smooth performance with longest tool life.

Three cutting edges of the $\frac{3}{4}$ -in. wide tool divide the chip into three sections which are curled and broken up by parallel chipbreakers for easy disposal.

Heretofore this operation was done with a high speed steel spade drill in 90 hr floor-to-floor time.

Continued on Page 132



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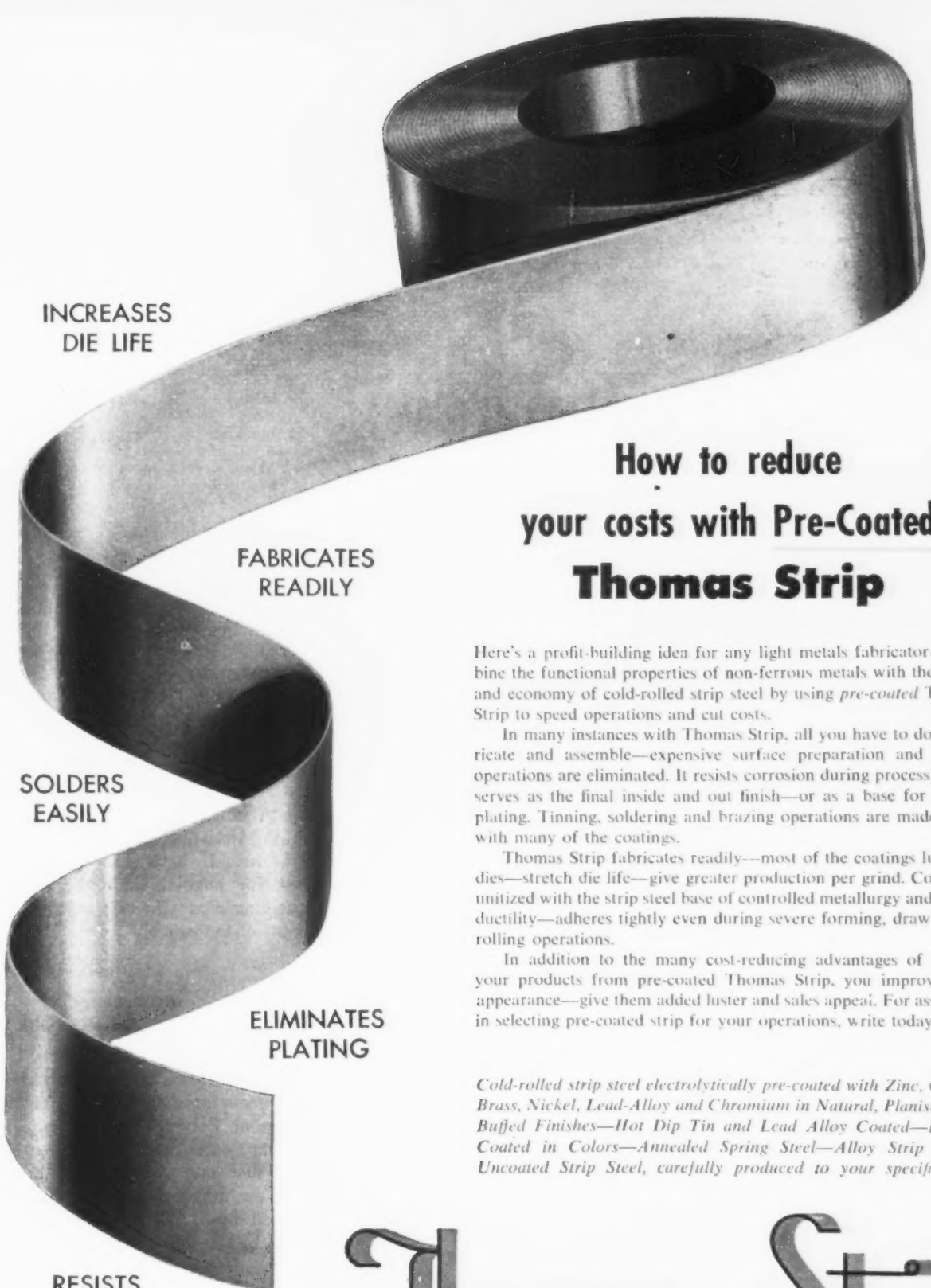


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How to reduce your costs with Pre-Coated Thomas Strip

Here's a profit-building idea for any light metals fabricator—combine the functional properties of non-ferrous metals with the utility and economy of cold-rolled strip steel by using *pre-coated* Thomas Strip to speed operations and cut costs.

In many instances with Thomas Strip, all you have to do is fabricate and assemble—expensive surface preparation and plating operations are eliminated. It resists corrosion during processing and serves as the final inside and out finish—or as a base for further plating. Tinning, soldering and brazing operations are made easier with many of the coatings.

Thomas Strip fabricates readily—most of the coatings lubricate dies—stretch die life—give greater production per grind. Coating is unitized with the strip steel base of controlled metallurgy and proper ductility—adheres tightly even during severe forming, drawing and rolling operations.

In addition to the many cost-reducing advantages of making your products from pre-coated Thomas Strip, you improve their appearance—give them added luster and sales appeal. For assistance in selecting pre-coated strip for your operations, write today.

Cold-rolled strip steel electrolytically pre-coated with Zinc, Copper, Brass, Nickel, Lead-Alloy and Chromium in Natural, Planished and Buffed Finishes—Hot Dip Tin and Lead Alloy Coated—Lacquer Coated in Colors—Annealed Spring Steel—Alloy Strip Steel—Uncoated Strip Steel, carefully produced to your specifications.

Thomas Strip



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Thomas Strip Division • Warren, Ohio

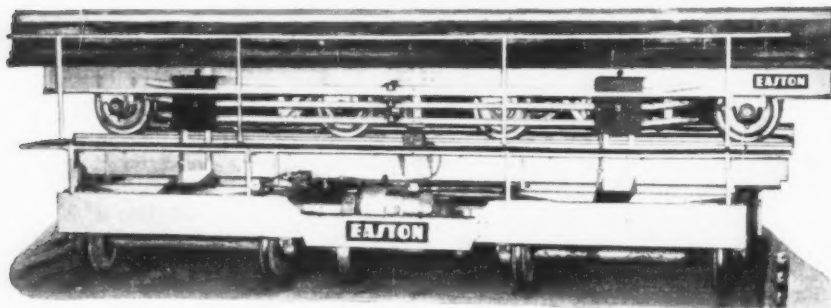
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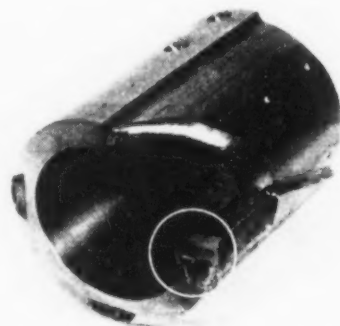
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Technical Briefs



TREPANNING head cutting line shaft has triple edge carbide tool. Carbide wear pads on side of trepanning head guide cutting tool during operation to assure true hole. Steel core is salvaged for use in smaller parts.

With the triple edge Kennametal tool, time is now 8 hr.

Long Cut—In another instance, forged steel rolls to 28 in. in diam and 46 ft long are trepanned with a tungsten carbide triple edge tool mounted in a trepanning head.

Cutting at 200 sfpm and 0.008-in. feed, a 24-in. diam hole is trepanned through the 46-ft long line shaft with ease. This operation previously required 250 hr machining time and is now performed in 54 hr. In both cases cores are used for smaller diameter parts, providing a worthwhile savings in essential material.

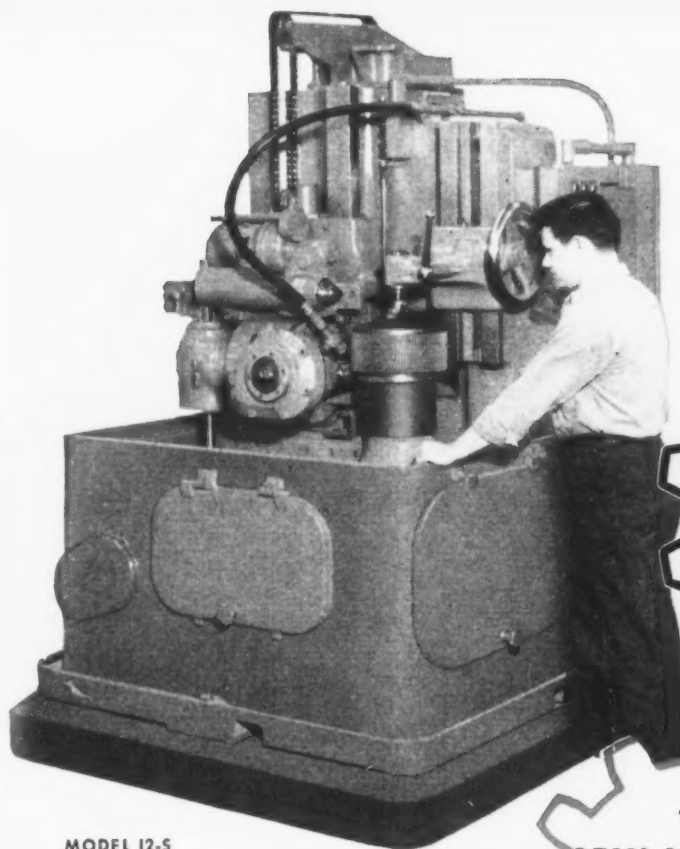
INSPECTION:

Inspect 2000-ft welded seam with one exposure on Canadian job.

Two thousand feet of welded seam securing a 48-ft diam Horton sphere at Polymer Corp. plant in Canada was recently inspected with just one radiographic shot. The new inspection technique developed by Dr. Tom Pepper was used by a 10-man crew from Isotope Products, Ltd. The complete radiographic record of the sphere welding was made on 1500 sheets of film.

The Horton sphere is used for storage of liquified volatile hydrocarbons under pressure. It is typical of hundreds of industrial tanks and reservoirs which re-

Turn Page



MODEL 12-S

Automatic HOBBING does the JOB

**FASTER, BETTER,
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THE SEMI-AUTOMATIC LEES-BRADNER GEAR HOBBING MACHINE

FEATURES AND SPECIFICATIONS

L-B patented Hob in-out mechanism

L-B electric hob shifter now available
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The pioneers of gear hobbing machines in this country have done it again!

Now Lees-Bradner brings you the ingenious Model 12-S *auto-matic* gear hobbing machine

with the electric hob shifter.

This amazing machine produces gears of maximum accuracy—including right or left hand spur and helical gears up to 45°.

After loading, it is necessary only to press the starter button and the hob is fed automatically across the face of the work at constant speed. At the completion of the cut the machine stops for reloading. Hence, one unskilled operator can easily handle a battery of these machines.

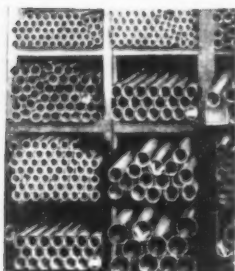
If production time and accuracy are at a premium in your plant it will pay you dividends to talk to your Lees-Bradner representative—*soon*.

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Company

STAINLESS STEEL



PIPE & TUBING

from warehouse stocks

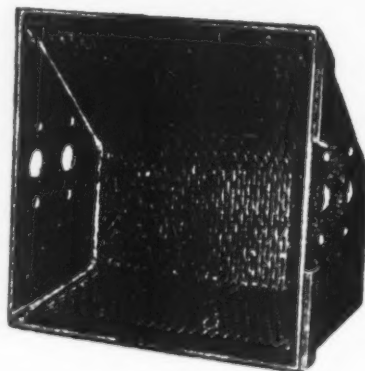
Murray warehouse stocks of stainless steel pipe and tubing are immediately available for prompt shipment in sizes from $\frac{1}{8}$ " O.D. to $8\frac{3}{8}$ " O.D. Special sizes from .008" O.D. up to 48" O.D. can be supplied on order. Stainless steel pipe and tube fittings are also stocked.

Other Murray products include carbon steel tubing and pipe for mechanical and pressure purposes; boiler and condenser tubes; welding and screw type fittings. Tube bending, swaging, upsetting.

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Hendrick is exceptionally well equipped to manufacture to specifications a wide range of metal products that involve such operations as perforating, shaping, forming, welding, brazing, riveting, etc. The

perforated elevator bucket illustrated is typical of the many specialized articles for whose fabrication Hendrick has unusual facilities. Write in detail regarding any metal product you desire fabricated.



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Technical Briefs

quire thorough inspection periodically. Such inspection involves careful examination of every inch of welding over vast surfaces. The new technique aimed at performing this gigantic job in minimum time. The project, its first application, will be used on other similar installations.

Loaded — The 1500 films were loaded into lightproof holders. Loading took 48-man hours. Each holder was marked with an identifying lead number which indicated its exact position on the tank. Holders were stapled to tough plastic backing strips which were cut to fit welds.

A 40-mph gale buffeted the ten human spiders who worked nearly 2 days plastering the film-loaded strips to the sphere surface. Strips were attached along welded seams with heavy tape.

To record the weld image on the 2000 ft of film, approximately 100 curies of iridium 192 was used. This isotope source was suspended on a chain inside the sphere.

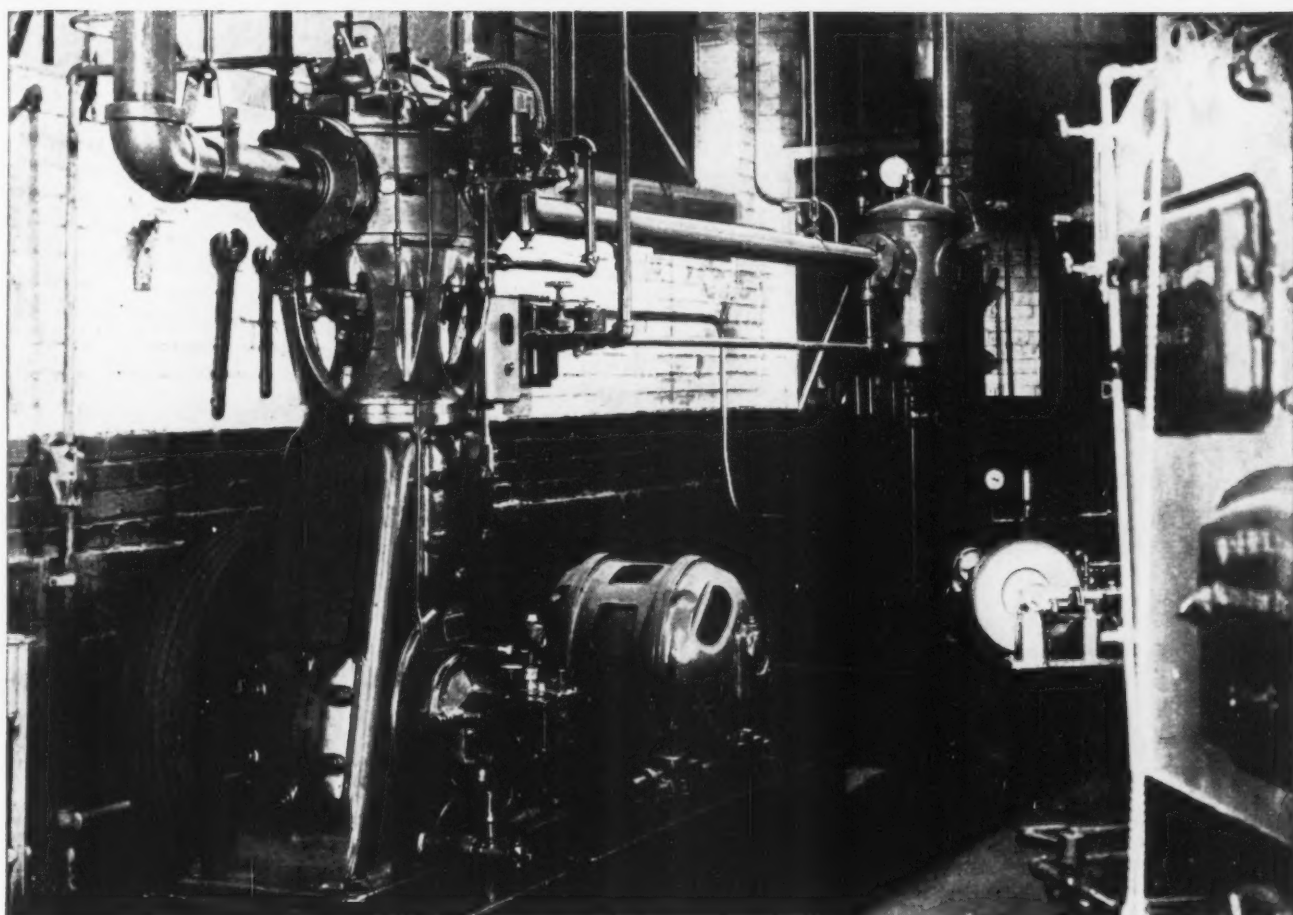
Sixteen Hours — The isotope source was left in position 16 hr. Test films were removed at intervals and processed to determine correct exposure. After exposure the isotope source and film were removed. It took 2 hr to remove the film from the sphere. The film was then unloaded, developed, edited, interpreted and filed.

Dr. Pepper points out that on the sphere, films are all the same distance from the source. A cylindrical tank presents a more complex problem which is being studied now.

Turn Page



We have an agreement, if I help her around the house, she helps me at the shop.



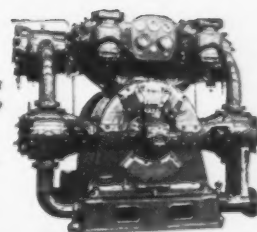
SAVE VALUABLE SPACE WITH THE EFFICIENT JOY WG-9 HEAVY DUTY AIR COMPRESSOR

The JOY WG-9 Vertical, with its small base, saves valuable floor space. Built in a range of sizes to 881 CFM, for continuous heavy-duty service. The complete line of JOY stationary units—high and low pressure compressors, oil-free compressors, boosters and vacuum pumps—includes a type for every need, each incorporating exclusive features developed by JOY research. Supplementary products include the only complete line of vaneaxial fans and blowers, and the new JOY Oxygen Generator. ● Write for free Bulletins.

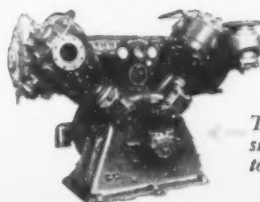
The JOY WL-80, in eleven sizes up to 641 CFM, with operating pressures to 125 psi.



The JOY WN-114, in single or twin units up to 7312 CFM.



The JOY WN-112, in single or twin units up to 3656 CFM.



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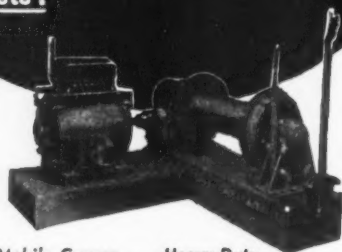
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Write for Bulletin No. 64A

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Technical Briefs

RESEARCH:

Microwave gas absorption studies possible with coaxial Stark cell.

A coaxial absorption cell recently developed by the National Bureau of Standards permits extension of microwave gas-absorption studies to a new low range of frequencies. The cell is now being employed at NBS in a spectroscopic investigation of gaseous compounds. Use of the cell has led to the discovery of the full series of absorption lines of the deuterio-ammonias. The apparatus is small and functions between 900 and 3400 mc without changing either the gas sample under investigation or the spectroscopy absorption cell as frequency varies.

Electromagnetic Field — Microwave spectroscopic techniques are used in many laboratories to provide supplementary information on atomic and molecular properties of gases.

Gas is subjected to an electromagnetic field and the frequency of the field varied over broad ranges that include the natural resonant frequency of the gas molecule.

A sharp decrease in the detected radio-frequency energy at a point of resonance provides a measure of the gas absorption.

Waveguide — A metallic waveguide serves both as the gas container and as the instrument for the propagation of the radio-frequency energy. However, the size of rectangular waveguide required increases with increasing wavelength. Measurements within the range of 900 and 3400 mc would require a waveguide cross section of 3¼" x 6½" down to 900 mc and waveguide sizes of 1½" x 3" and smaller for frequencies above 2000 mc.

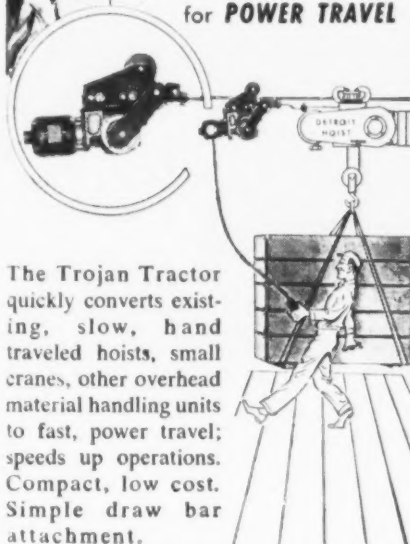
Fewer Changes — To avoid the need of changing large, cumbersome waveguide sections and to make the experiments more practicable at the lower frequencies the new cell was developed.

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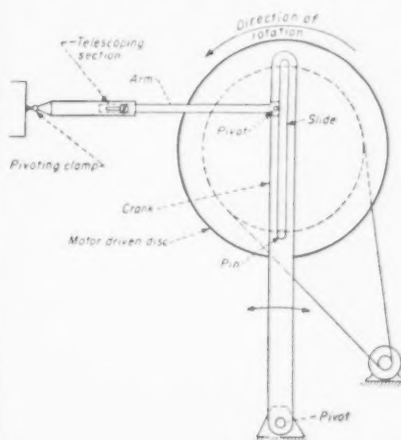
Technical Briefs

MECHANICAL MUSCLE:

Ingenious test mechanism checks life of filing cabinet drawers

An ingenious and relatively simple test mechanism solved the problem of how to tell a city purchasing department which filing cabinet drawer would give the most mileage.

A large eastern city, wanted more information on filing cabinets for a comparison of various



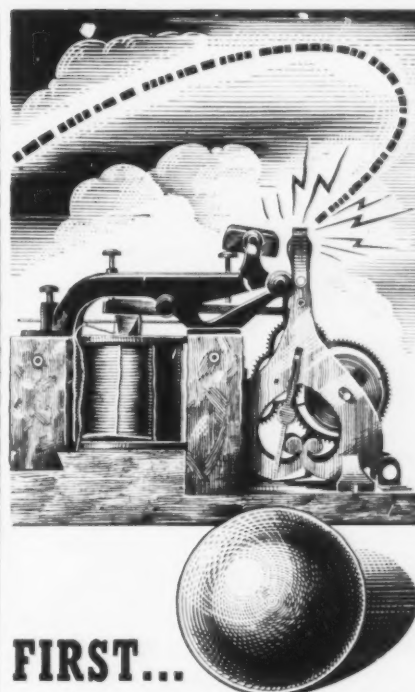
SIMPLE MECHANISM devised for testing service life of file cabinets helped one city find cabinet best suited for its needs.

brands. Information desired was: (1) Condition of the cabinet after a drawer carrying an 80 lb load had been opened and closed 50,000 times; (2) increase in the amount of pull required to open the drawer after each 10,000 cycles; (3) number of cycles before a maximum pull of $3\frac{3}{4}$ lb would be required.

Testing Machine—Engineers at Sam Tour & Co., Inc., a New York research laboratory built a mechanical muscle consisting of a driving motor, speed reduction system, crank, and arm to deliver the horizontal push-and-pull to operate the drawer.

Performance Varies — Results showed that the cabinets, all of which had been tested under identical conditions, varied widely in performance. The number of cycles registered before an excessive pull was encountered ranged from 2650 to 43,700 cycles. The force required to open the drawers in the various cabinets ranged from $3\frac{1}{2}$ to 18 lb.

Turn Page



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then Radio and Television without wires but, never a superior bearing without precision balls. In our engineering department new manufacturing techniques are proven and then put into practice. We design and build most of our equipment.

Universal Precision Balls are manufactured to within ten millionths of an inch perfect spheres. They are 100% inspected and individually gauged. Life tests have proven that rigid metallurgical specifications, careful heat treatment and precise geometrics pay large dividends.

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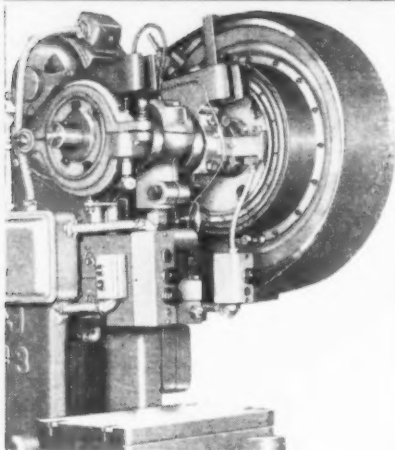
Specify Universal Precision Balls when you want superior surface finish, sphericity, size accuracy and fine tolerances.

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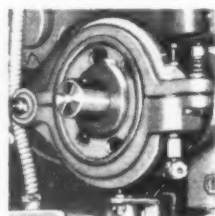
PRECISION BALLS OF CHROME
AND STAINLESS STEEL, BRONZE
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Technical Briefs

PICKLING:

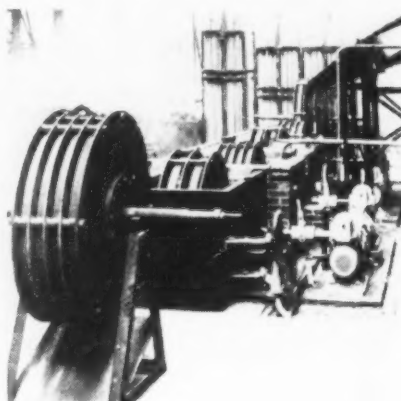
Low cost pickling method uses coil-in-a-basket.

A simplified, low-cost pickling plant operation designed on an entirely new principle, will handle from 5000 to 18,000 tons per year of coiled hot-rolled strip from 2 to 14 in. wide and from 0.042 to 0.188 in. thick. Improved designs will handle strip to 24 in. wide.

Low first cost of the equipment, in addition to low labor and operating cost, enable users of coiled strip to do their own pickling and oiling economically. Processing cost is reported to be only a fraction of the price of custom work.

Offered in U. S.—North American manufacturing rights to the equipment, have been acquired by The Yoder Co., Cleveland.

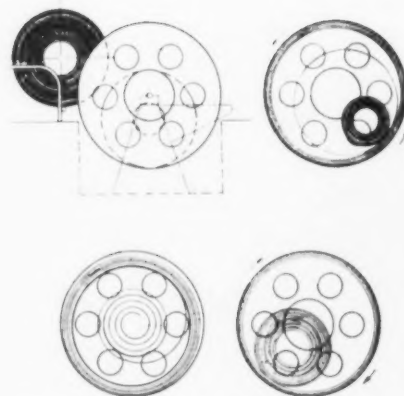
In operation, coils loaded into cages are rotated at about 20 rpm



ROTARY PICKLING TANKS are deep enough to take cage, prevent splashing over the edges. Some cages hold more than one coil.

in a pickling tank. Uncoiling, scale breaking, loose coiling and pinning, are all performed with a minimum of hand labor, by the almost automatic operation of the cages loaded with coils. The metal is uncoiled by revolving the cage in direction opposite to that of the coil windings.

Rotation—Rotation of the cage tends to carry the coil around with it. The heavy coil tends to remain near the bottom of the cage while its leading end is being carried around with the cage. When rotation of the cage is reversed the coil is rewound.



CLOSEUP OF COIL CAGES and tanks in rotary coil pickling and oiling plant. Each tank has 5 hp motor, gear reducer, clutch for rotating cages in either direction. Drawing shows coil entering cage, unwinding and rewinding.

Flexing—Repeated flexing of the stock in unwinding and rewinding the coil loosens the scale and facilitates its removal by the acid. At the same time, violent agitation of the liquid resulting from revolving the cage in it, increases pickling efficiency. Pickling is completed in 15 to 30 minutes, depending on the strength of the acid.

Each coil is then transferred to the adjoining rinse water tank where the cage is again rotated, and the coil again unwound. The cage carrying the unwound or expanded coil now goes to the oil bath for rotation in opposite direction and rewinding to its original size, ready for use.



"The way you treat your job, Jones, the Government should deduct amusement tax, too!"



ONE of the proofs of a file's basic soundness is its clear ring — "clink" — when you tap it lightly on an anvil or other hard piece of metal. A dull "clunk" is usually a sign of "water cracks" or poor hardening.

Nicholson employs a score of checks and tests in connection with steel examination, forging, blank smoothing, annealing, cutting, hardening and other operations in the manufacture of files. The "ringing" test is one of many that lead to the final "okay" under the Nicholson policy of *Twelve perfect files in every dozen.*

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FREE BOOK, "FILE PHILOSOPHY" — 48 interesting illustrated pages on kinds, use and care of files. Indispensable to production heads, purchasing agents, shop foremen. How many copies shall we send you?



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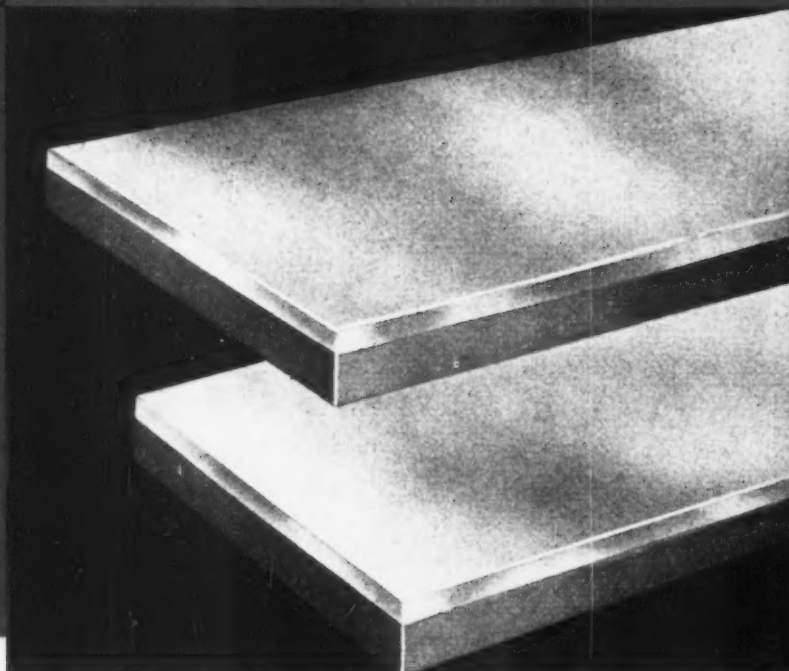
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...with carbon steel strength
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If you use stainless steel in your fabrication or construction, chances are you can lower your material costs substantially by means of Claymont Stainless-Clad Plates.

In numerous and diversified applications, these plates are giving all the advantages of stainless steel, including prolonged resistance to the corrosive action of acids and alkalis.

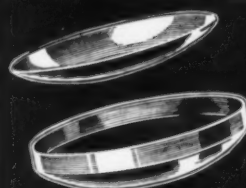
Claymont Stainless-Clad Plates are a composite of stainless steel permanently bonded to a carbon steel backing. Easy to fabricate, they will not buckle, crack or peel under the severest forming operations. To order, write or call Claymont Steel Products Department, Wickwire Spencer Steel Division, Claymont, Delaware.

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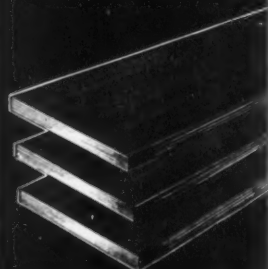
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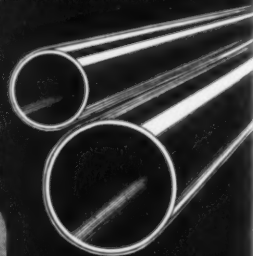
THE COLORADO FUEL AND IRON CORPORATION



Flanged and Dished Heads



Carbon and Alloy Steel Plates



Large diameter steel pipe

1280

What Comes After The Catch-Up Period In Steel?

NPA survey of defense item expansion expected to disappoint some . . . Long-term demand is the reason . . . Good progress being made . . . More new records expected in fourth quarter.

installations 26 pct complete, while steel furnace and rolling mill expansion is 65 pct in place.

A National Production Authority survey of steel expansion by products will probably result in keen disappointment in some government circles. Reason: some of the product capacities the government would like to see expanded most are not considered profitable in a peacetime economy.

The NPA survey is based on suspicion that certain steel items sorely needed for defense and defense supporting programs are not being expanded as rapidly as high profit, high demand peacetime items. Among the products in which the government would most like to see capacity boosted are large diameter bars, heavy structural shapes and bearing piles, medium and heavy plates and seamless pipe and tubing.

Demand Outlook—These products are in extremely short supply now. However, industry expansion plans are based on estimates of demand over the next several years. When put to this test some products do not look profitable.

Once the basic expansion phase of the defense program is completed demand outlook for these products is not so promising. At least one important industry source summarizes the outlook for these products this way:

(1) On large diameter bars we will be over the hump, perhaps within 9 months—if military demand does not greatly expand. (2) Heavy plate demand will probably be well taken care of within the next year. (3) Heavy structurals should approach balance within the next 6 months. (4) Demand for seamless pipe in the oil industry is expected to fade to half the current rate within a year and a half.

The Reasons—Demand for line pipe, heavy plates and structurals is geared to the huge expansion cycle. Once these demands have been satisfied most people in the steel industry see little chance of continuing at present levels. The military take of shell quality bars is already thought to have reached a high plateau. Though oil drilling and transporting needs are high, Iranian losses are already thought to have been offset. New industrial plants, once built, will stand for many years.

Some government sources already recognize the cloudy profit outlook on military items now in very short supply. The NPA survey will probably (1) point to the immediate critical needs and (2) recommend all facilities producing these items be operated at capacity. This might mean channeling some semi-finished steel away from production of items used more extensively in civilian products. Recommendations might also cover better mobilization planning to offset recurrent peaks of industrial expansion—especially for defense supporting programs such as freight cars and oil wells.

Record Rate—Steelmaking operations this week are scheduled at 106.5 pct of rated capacity, unchanged from last week's revised rate. This is another new all time high for the industry—both in operations and total tonnage produced. It is expected that the fourth quarter will set a new record for both steel production and consumption.

Although the steel expansion program is well over half completed, progress is not uniform. Latest reports show blast furnace

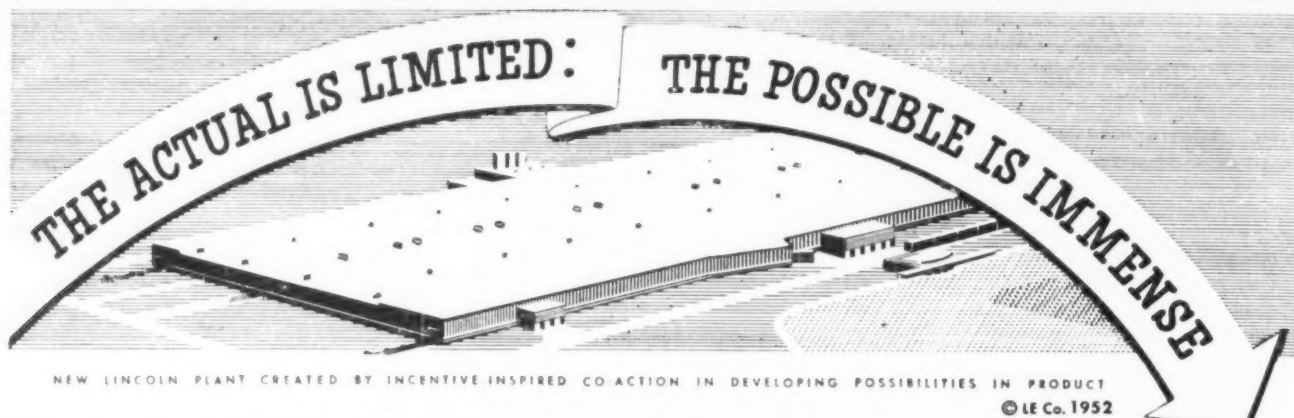
Inventory Trouble—Going into the winter, scrap stocks are in fine shape. A number of mills are stocked to the limit of their storage capacity. But record breaking operations will keep plenty of pressure on scrap sources, especially when winter weather tends to curtail collection.

The steel strike last summer probably made scrap supplies look more comfortable than they are. For one thing about 10 million tons of steel inventory was used up without being replaced with new production. Meanwhile, scrap collection pipelines filled up as mill storage space became clogged.

A careful check of steel inventories in manufacturing plants shows the 30-day limit imposed by NPA is almost impossible to enforce. NPA investigators are busy spot checking manufacturing plants. What they are finding might bring about an early change in inventory regulations.

Step Ahead—Almost any manufacturing plant can build a pretty good case for hardship under the 30-day inventory restriction. Some plants living hand-to-mouth on certain steel items are in great violation on other items. Inventories generally are in a sad state of unbalance. Once in violation it is not a simple matter for a plant to reduce inventory quickly even if it wanted to.

The tremendous drive for production by auto companies is being felt in the steel industry. Their aim seems to be to reach the consuming market quickest with the most. This policy might cause them to use up their 1952 quotas and finish the year with first quarter tonnage borrowed under the 15-day latitude permitted by NPA.



WELDED DESIGN SAVES 25% ON COST ...cuts weight 26%

By **B. L. Kapp**, Plant Manager & Chief Engineer
Corson Brothers, Inc.
Indianapolis, Indiana

WELDED design enables us to make the most efficient use of materials in the manufacture of our "Seedmaster". Formerly it was necessary to use heavy wall sections with gray iron because of casting restrictions. With steel we now fabricate a more rigid, more dependable product using materials as light as 12 gauge. On this one machine, for example, weight was cut from 23 to 17 pounds. Since welded steel is easier to fabricate, our shop costs have been lowered by 25%. Former field service problems of breakage have been eliminated.

In addition to components shown in Figures 1 and 2, the main frame was also converted to welded steel. In place of a solid cast rectangular member, the main frame is now formed from 12 gauge steel with rolled edges for rigidity. The steel design is easier to assemble and has greater sales appeal.

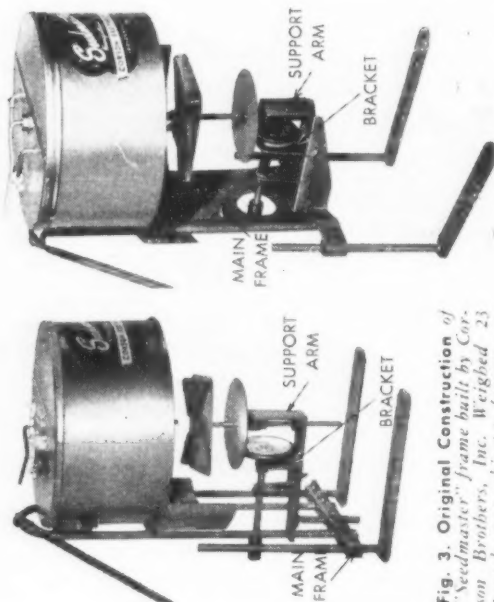


Fig. 4. Present Welded Steel Design. Steel members replace cast components, prove to be lighter, but stronger in construction yet are formed from 12 gauge sheet.

Fig. 3. Original Construction of "Seedmaster" frame built by Corson Brothers, Inc. Weighed 23 pounds, was subject to fracture.

PROPER DESIGN IN WELDED STEEL IMPROVES PRODUCT LOWERS COST



Original Construction

Welded Steel Design

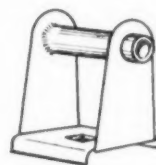
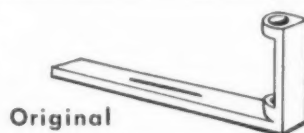


Fig. 1. Former Design of bracket was gray iron . . . is now fabricated from 12 gauge steel. Steel design is rugged, durable, will not fracture.



Original Construction

Welded Steel Design

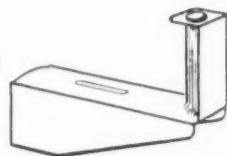


Fig. 2. Support Arm originally a casting, required costly milling and drilling. Wall section was 1/4". Is now formed from 12 gauge material, has greater strength, increased rigidity, less weight.

**SAVES MATERIAL
LOWERS COST**

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THE LINCOLN ELECTRIC COMPANY
CLEVELAND 17, OHIO

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

Market Briefs and Bulletins

Getting Ready—One of the medium-sized steel producers expects to operate at about 90 pct of capacity during the first quarter of next year. Though they are keeping quiet about it, they are preparing to do some heavy selling. Indications are that this firm expects real selling will be necessary on flat-rolled items by the end of this year.

Steel Shortage—An example of the hand-to-mouth condition of steel supplies is the case of an automotive supplier who is using his forging quality steel so fast that he has asked mills to send Jominy hardness test results along with the steel. Previously mills were mailing test results after shipment, but the auto supplier was using up his steel supply so fast that he was often pretty well along on forging and machining before the test results arrived.

Self-Certification—National Production Authority has amended order M-11 so as to permit copper controlled materials producers to obtain steel, aluminum, and other copper controlled materials by self-certification. This means separate applications do not have to be filed with NPA for these materials.

Expansion—Caterpillar Tractor Co. has completed arrangements for a long-term lease for a warehouse and parts processing plant to be erected on land immediately adjacent to the company's new plant site at York, Pa.

Short Strike—A brief strike at the Bethlehem Steel Co. mill at Lackawanna, N. Y., resulted in the loss of about 40,000 ingot tons of steel. Lasting a total of only 3 days over the week-end, the entire plant was virtually shut down including openhearth and banking of the blast furnaces. Walkout started in the rolling mill shop with the grievance now scheduled to go before a third party for mediation.

More Titanium—Defense Production Administration has revised the defense expansion goal for titanium upward by 10,000 short tons over the earlier June target of 12,000 tons. This means an expansion of 21,500 tons above sponge production in 1951.

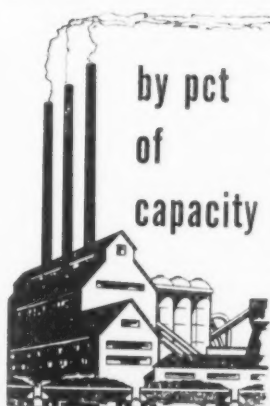
New Bar Mill—Jones & Laughlin Steel Corp's new bar mill at its Pittsburgh Works will be in operation around Jan. 1, 1953. Mill will have an annual capacity of 360,000 tons in a size range of 19/64 to 1 1/4 in. rounds and comparable sizes in other sections and small shapes.

Price Quiz—Some 1500 automobile dealers are getting a new questionnaire from Office of Price Stabilization, which wants information to use in determining the issues involved in protest proceedings filed against Ceiling Price Reg. 83, covering new passenger car sales.

Relax Controls?—National Production Authority is studying proposals by industry to determine what relaxation if any should be made over control of distribution of tool steels. Industry says no scarcity of tool steels has now existed for several months, that the industry's operating only at about 75 pct of capacity, and that continuation of controls imposes a needless burden on its customers. Both tungsten and molybdenum are in ample supply to meet current demand, NPA explains. But it says there isn't much chance that it will remove controls over tungsten as long as the government is stockpiling it. NPA says cobalt is in tight supply.

Supersonic Interceptor—The Air Force's first supersonic delta-wing interceptor, the F-102, will be produced by Consolidated Vultee Aircraft Corp., San Diego, Calif.

STEEL OPERATIONS

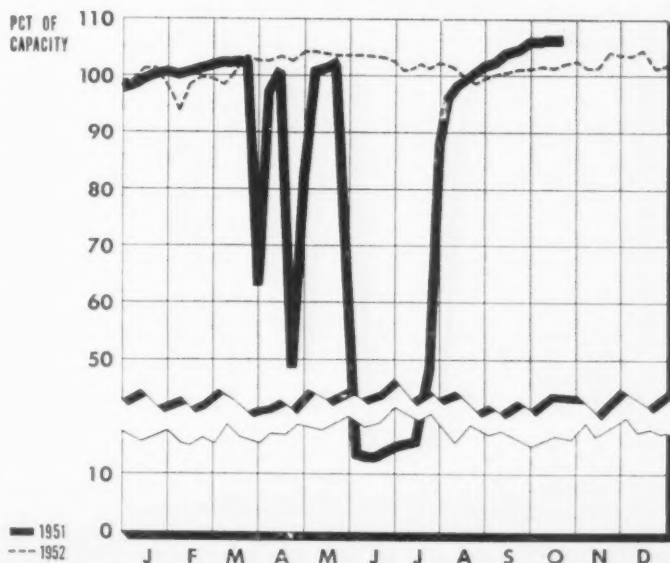


District Operating Rates

District	Week of Oct. 19	Week of Oct. 12
Pittsburgh	109.0	109.0*
Chicago	110.0	108.5*
Valleys	105.0	105.0
Philadelphia	100.0	100.0
West	108.0	107.5*
Buffalo	93.0	106.5
Cleveland	107.5	107.0*
Detroit	111.0	109.0*
Wheeling	97.0	97.0*
Birmingham		
(South)	107.5	103.0
South Ohio River	90.0	90.0
St. Louis	101.0	110.0
East	80.0	110.0*
Aggregate	106.5	106.5*

Beginning Jan. 1, 1952, operations are based on annual capacity of 108,587,670 net tons.

* Revised



Copper Price Meeting Fizzles

Brass mill people present case to OPS . . . Ask 100 pct pass-through of higher costs for foreign copper, labor, freight . . . Stabilizers will think about it—By R. L. Hatschek.

The promised meeting between Office of Price Stabilization and members of the brass mill industry on confusion in copper pricing was held last week. But not much happened other than officially informing the price stabilizers of the muddle the industry is caught in. (See THE IRON AGE, Sept. 18, p. 198 and Oct. 2, p. 122.)

Lack of sufficient quantities of domestic copper and a consequent greater use of higher-priced foreign copper are contributing heavily to expense of operations in the brass mill products industry.

On the Chin—Industry spokesmen said they have not been able to obtain enough U. S. copper to maintain the ratio of 60 pct domestic to 40 pct foreign metal set by the National Production Authority. Ratio in the third quarter was actually 54.9 pct domestic to 45.1 pct foreign.

In using more than 40 pct foreign copper at 36.5¢ per lb, they said, the industry is absorbing an increase of about 5/8 of a cent per lb. They estimated that recent rises in labor, freight and other operating costs amount to an additional 1.72¢ per lb for a total of about 2.345¢ per lb.

Think About It—In view of the producers' need for price adjustments on their output, spokesmen

recommended that the government allow a 100 pct pass-through of increased costs of materials, labor and freight—something a lot of other industries would also like. But since the brass mills were permitted only an 80 pct pass-through of foreign copper costs they have a pretty strong case.

This type of action is opposed by controls officials, and the industry group received only a promise of "due consideration" of its recommendation.

Expansion — Bagdad Copper Corp. of Bagdad, Ariz., will undertake a \$14 million expansion of its mining operations on the basis of a government agreement to provide a market for up to 13,500 tons of copper and 940,000 lb of molybdenite annually for 8 years after the expansion is completed.

Defense Materials Procurement Agency, which handled negotiations with Bagdad, said the firm will enlarge its present open-pit mine and install new electrolytic refining facilities during the next 2 years.

Big Boost—After the work is done, the mine will be "one of the more important producers in the country," according to DMPA. Currently, Bagdad produces only concentrates which are shipped to El Paso, Tex., for smelting and

refining. Its annual capacity is 10,000 tons of recoverable copper.

Enlargement and improvement of facilities, DMPA predicts, will enable Bagdad to produce 17,500 tons of electrolytically refined copper and 6000 tons of recoverable copper contained in precipitates each year.

Aluminum Stocks—It is reliably reported that Great Britain is taking title to all the aluminum contracted from Canada. But it isn't all being used. The result is a surplus of British stocks amounting to 30,000 to 40,000 tons above what is considered a normal working inventory.

Predictions not so long ago had aluminum in good supply by this time. But increased military and stockpile requirements ended the optimism—even dictated a 200,000-ton-per-year third round of expansion which is still in a rather nebulous state. Low water is causing the loss of 550 tons of light metal a day.

Wouldn't it be neighborly if the British were to help fill in our needs as the Canadians did when the Massena smelter's production was knocked down by storms.

Lead Prices—Demand for lead in the past week has been a bit confused as a result of price fluctuations. The London market, of course, is the one to be watched. At the end of the week, London's quotation was at the New York equivalent, including insurance, freight and duty, of about 12.9¢ per lb. This compares with a New York price of 14¢. This situation could result in further reductions of the domestic price.

Production of both lead and zinc will decline as a result of lower prices for both metals. New Jersey Zinc Co. and Kennecott Copper Corp. are reported to be closing down a few marginal mines. Zinc demand is not heavy as buyers wait and watch developments. All sales are at 13.5¢ East St. Louis, or a price at shipment date or average price basis.

NONFERROUS METAL PRICES

	Oct. 15	Oct. 16	Oct. 17	Oct. 18	Oct. 20	Oct. 21
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.21 3/4	\$1.20 3/4	\$1.21		\$1.21 1/8	\$1.21 1/8*
Zinc, East St. Louis	13.50	13.50	13.50	13.50	13.50	13.50
Lead, St. Louis	13.80	13.80	13.80	13.80	13.80	13.80

Note: Quotations are going prices.

*Tentative.

Worth Looking Into!

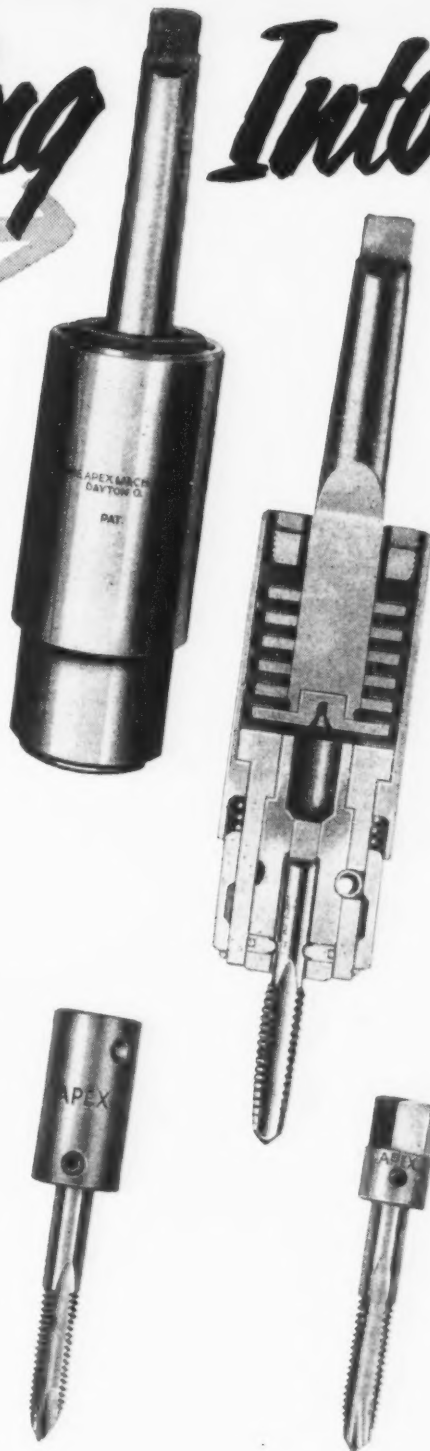
APEX friction chucks

Wherever the tool is subject to breakage, that's the spot for an Apex Friction Chuck. Merely turn the adjusting nut to secure the proper tension and the friction will slip just before the breaking point of the tool is reached. End thrust from tapping or drilling, or pressure exerted on the spindle will not affect tension setting. Setting maintained for extended periods without requiring readjustment. Safe and simple to operate, Apex Friction Chucks will reduce tool breakage. Used on reversible drill presses, radials, hand screw machines, all makes of tapping devices, and with air or electric tools.

...and APEX sockets for tap driving

For re-tapping or cleaning damaged or clogged tapped holes. Set screw holds tap firmly in hex or female square socket. Quickly and easily attached to power tool. Saves time on assembly and production lines by enabling operator to re-tap damaged holes, or clean holes plugged with paint, gook or similar materials.

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POWER BITS, INSERT BITS AND BIT HOLDERS, FOR PHILLIPS, FREARSON (Reed & Prince), SLOTTED, CLUTCH HEAD and SOCKET HEAD SCREWS • HAND DRIVERS FOR PHILLIPS, FREARSON AND CLUTCH HEAD SCREWS • TWO-PIECE DRIVERS FOR HEX HEAD SCREWS • SOCKETS, EXTENSIONS, ADAPTERS AND NUT SETTERS • UNIVERSAL SOCKETS, EXTENSION WRENCHES AND ADAPTERS • AIRCRAFT AND INDUSTRIAL UNIVERSAL JOINTS • SELF-RELEASING AND ADJUSTABLE STUD SETTERS • SAFETY FRICTION TAPPING CHUCKS • VERTICAL FLOAT TAPPING CHUCKS.

October 23, 1952

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Nonferrous Prices

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship, pt. jrt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 31.6¢; 4S, 61S-O, 33.6¢; 52S, 35.8¢; 24S-O, 24S-OAL, 34.5¢; 76S-O, 76S-OAL, 41.9¢; 0.081 in., 2S, 3S, 32.8¢; 4S, 61S-O, 35.2¢; 52S, 37.4¢; 24S-O, 24S-OAL, 35.8¢; 76S-O, 76S-OAL, 43.9¢; 0.032 in., 2S, 3S, 34.5¢; 4S, 61S-O, 39.0¢; 52S, 41.8¢; 24S-O, 24S-OAL, 43.8¢; 76S-O, 76S-OAL, 54.8¢.

Plate 1/4 in. and heavier: 2S-F, 29.7¢; 4S-F, 31.7¢; 52S-F, 33.4¢; 61S-O, 32.3¢; 24S-O, 24S-OAL, 34.9¢; 76S-O, 76S-OAL, 40.7¢.

Extruded Solid Shapes: Shape factors 1 to 5, 45.5¢ to 77.2¢; 12 to 14, 36.2¢ to 93.5¢; 24 to 26, 38.7¢ to \$1.22; 36 to 38, 45.9¢ to \$1.79.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 35-F, 39.4¢ to 35.2¢; cold-finished, 0.375 to 3 in., 2S-F, 3S-F, 42.5¢ to 36.8¢.

Screw Machine Stock: Rounds, 11S-Ts, 1/4 to 11/32 in., 56.2¢ to 44.1¢; 3/8 to 1 1/2 in., 43.6¢ to 41.0¢; 1 9/16 to 3 in., 40.4¢ to 37.8¢; 17S-Ts, 1.6¢ per lb lower. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 41.5¢ to 30.5¢; 52S, 50.4¢ to 36.8¢; 56S, 53.6¢ to 44.1¢; 17S-T4, 56.7¢ to 39.4¢; 61S-T4, 50.9¢ to 88.9¢.

Extruded Tubing: Rounds, 63S-T6, OD in in., 1 1/4 to 2, 38.9¢ to 56.7¢; 2 to 4, 35.2¢ to 47.8¢; 4 to 6, 35.7¢ to 43.6¢; 6 to 9, 36.2¢ to 45.7¢.

Roofing Sheet: Flat, 0.019 in. x 28 in., per sheet, 72 in., \$1.199; 96 in., \$1.598; 120 in., \$1.997; 144 in., \$2.398. 0.24 in. x 28 in., 72 in., \$1.448; 96 in., \$1.931; 120 in., \$2.414; 144 in., \$2.897. Coiled sheet: 0.019 in. x 28 in., 26.6¢ per lb; 0.024 in. x 28 in., 28.2¢ per lb.

Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FSI-O, 1/4 in., 63¢; 3/16 in., 65¢; 1/8 in., 67¢; B & S Gage 10, 68¢; 12, 72¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., 1/4 to 0.311 in., 74¢; 1/2 to 3/4 in., 57.5¢; 1 1/4 to 1.749 in., 53¢; 2 1/2 to 5 in., 48.5¢. Other alloys higher. Base up to 3/4 in. diam, 10,000 lb; 3/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft. for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 180 lb, 20,000 lb; 1.80 and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057; 1/4 in. to 5/16, \$1.40; 5/16 to 3/8, \$1.26; 3/8 to 1/2, 98¢; 1 to 2 in., 76¢; 0.165 to 0.219, 5/8 to 3/4, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1 1/2 in., 10,000 lb; 1 1/2 to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Titanium

(100,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

Nickel and Monel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	77	60 1/2
Strip, cold-rolled	83	63 1/2
Rods and bars	73	58 1/2
Angles, hot-rolled	73	58 1/2
Plates	75	59 1/2
Seamless tubes	106	93 1/2
Shot and blocks		53 1/2

Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	45.52		45.12
Copper, h-r		41.37	
Copper, drawn		42.62	
Low brass	42.34	42.03	
Yellow brass	40.17	39.86	
Red brass	43.10	42.79	
Naval brass	44.72	42.78	40.04
Leaded brass			38.02
Com's bronze	44.39	44.08	
Mang. bronze	48.44	42.83	43.89
Phos. bronze	64.72	64.97	
Muntz metal	42.69	38.25	39.50
Ni silver, 10 pct	51.96	54.18	

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed 20.00
 Aluminum pig 19.00
 Antimony, American, Laredo, Tex. 39.00
 Beryllium copper, 3.75-4.25% Be. \$1.56
 Beryllium aluminum 5% Be, Dollars per lb contained Be. \$69.50
 Bismuth, ton lots 22.25
 Cadmium, del'd 22.00
 Cobalt, 97-99% (per lb) \$2.40 to \$2.47
 Copper, electro, Conn. Valley 24.50
 Copper, Lake, delivered 24.625
 Gold, U. S. Treas., dollars per oz. \$35.00
 Indium, 99.8%, dollars per troy oz. \$2.25
 Iridium, dollars per troy oz. \$200
 Lead, St. Louis 13.80
 Lead, New York 14.00
 Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb. 24.50
 Magnesium, sticks, 100 to 500 lb. 42.00 to 44.00
 Mercury, dollars per 76-lb flask, f.o.b. New York \$191 to \$193
 Nickel electro, f.o.b. N. Y. warehouse 59.58
 Nickel oxide sinter, at Copper Creek, Ont., contained nickel 52.75
 Palladium, dollars per troy oz. \$24.00
 Platinum, dollars per troy oz. \$90 to \$93
 Silver, New York, cents per oz. 83.25
 Tin, New York \$1.21 1/4
 Titanium, sponge 55.00
 Zinc, East St. Louis 13.50
 Zinc, New York 14.33
 Zirconium copper, 50 pct 36.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot
 No. 115 27.25
 No. 120 26.75
 No. 123 26.25
 80-10-10 ingot
 No. 305 33.00
 No. 315 30.50
 88-10-2 ingot
 No. 210 41.50
 No. 215 40.00
 No. 245 34.50
 Yellow ingot
 No. 405 23.25
 Manganese bronze
 No. 421 30.50

Aluminum Ingot

(Cents per lb, 100,000 lb and over)

95-5 aluminum-silicon alloys
 0.30 copper, max. 20.6
 0.60 copper, max. 20.4
 Piston alloys (No. 122 type) 20.5
 No. 12 aluminum (No. 2 grade) 19.5
 108 alloy 20.6
 195 alloy 20.8
 13 alloy (0.60 copper max.) 20.8
 ASX-679 20.5

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1-95-97 1/2% 18.80
 Grade 2-92-95% 18.60
 Grade 3-90-92% 18.40
 Grade 4-85-90% 18.20

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper
 Cast, oval, 15 in. or longer 37.84
 Electrodeposited 33 3/4
 Flat rolled 38.34
 Forged ball anodes 43
 Brass, 80-20
 Cast, oval, 15 in. or longer 34 3/4
 Zinc, oval 26 1/2
 Ball, anodes 25 1/2
 Nickel, 99 pct plus
 Cast 76.00
 Rolled, depolarized 77.00
 Cadmium 52.15
 Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn. 97 1/2

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum 63
 Copper sulfate, 99.5 crystals, bbl. 12.85
 Nickel salts, single or double, 4-100 lb bags, frt. allowed 27 1/2
 Nickel chloride, 375 lb drum 27 1/2
 Silver cyanide, 100 oz lots, per oz. 67 1/4
 Sodium cyanide, 96 pct domestic 200 lb drums 19.25
 Zinc cyanide, 100 lb drum 47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1/4¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21 1/2	20 3/4
Yellow brass	19 1/4	17 3/4
Red brass	20 1/4	19 3/4
Comm. bronze	20 1/4	19 3/4
Mang. bronze	18 1/2	17 3/4
Brass rod ends	18 3/4	

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire 19.25
 No. 2 copper wire 17.75
 Light copper 16.50
 Refinery brass 17.25
 Radiators 14.75
 * Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire 19.25
 No. 2 copper wire 17.75
 Light copper 16.50
 No. 1 composition 18.50
 No. 1 comp. turnings 18.25
 Rolled brass 15.50
 Brass pipe 16.50
 Radiators 14.75

Aluminum

Mixed old cast 9 — 9 3/4
 Mixed new clips 10 — 11
 Mixed turnings, dry 9 — 9 1/2
 Pots and pans 8 1/2 — 9

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire. 18 3/4 — 19 3/4
 No. 2 heavy copper and wire. 17 — 17 1/2
 Light copper 15 1/2 — 16
 New type shell cuttings 15 1/2 — 16
 Auto radiators (unsweated) 14 — 18
 No. 1 composition 17 1/2 — 18
 No. 1 composition turnings 17 — 17 1/2
 Unlined red car boxes 16 1/2 — 17
 Cocks and faucets 15 — 15 1/2
 Mixed heavy yellow brass 11 1/2 — 12
 Old rolled brass 14 1/2 — 15
 Brass pipe 15 1/2 — 16
 New soft brass clippings 16 — 16 1/2
 Brass rod ends 15 1/2 — 16
 No. 1 brass rod turnings 15 — 15 1/2

Aluminum

Alum. pistons and struts 6 1/2 — 7
 Aluminum crankcases 7 1/2
 2S aluminum clippings 10 1/2
 Old sheet and utensils 7 1/4
 Borings and turnings 5 — 6
 Misc. cast aluminum 7 1/4 — 8
 Dural clips (24S) 7 1/2

Zinc

New zinc clippings 8 — 8 1/2
 Old zinc 5 — 5 1/2
 Zinc routings 3 1/2 — 4
 Old die cast scrap 4 1/2 — 5

Nickel and Monel

Pure nickel clippings 35 — 36
 Clean nickel turnings 35 — 36
 Nickel anodes 35 — 36
 Nickel rod ends 35 — 36
 New Monel clippings 28 — 29
 Clean Monel turnings 20 — 21
 Old sheet Monel 28 — 29
 Nickel silver clippings, mixed. 13 — 14
 Nickel silver turnings, mixed. 12 — 13

Lead

Soft scrap, lead 10 3/4 — 11
 Battery plates (dry) 5 3/4 — 6 1/2
 Batteries, acid free 3 3/4

Magnesium

Segregated solids 15 — 16
 Castings 14 — 15

Miscellaneous

Block tin 100
 No. 1 pewter 70
 No. 1 auto babblitt 55 — 60
 Mixed common babblitt 14 1/2 — 14 3/4
 Solder joints 17 1/2 — 18
 Siphon tops 60
 Small foundry type 18 — 18 1/2
 Monotype 13 1/2 — 14
 Lino. and stereotype 12 1/2 — 13
 Electrotpe 10 3/4 — 11
 Hand picked type shells 8 3/4 — 9
 Lino. and stereo. dross 5
 Electro. dross 4 1/2



"THAT'S OUR STEEL STOCKROOM"

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Carpenter

Mill-Branch Warehouse Service

SPECIALTY TOOL • ALLOY and STAINLESS STEELS

October 23, 1952

147

Market on Even Keel, Dealers Complain

Generally scrap trading maintained an even keel . . . Dealers continue reports of scrap tightness . . . OPS passes law for scrap cleanliness . . . Rules out dirt, rust, foreign stuff.

The scrap market generally maintained an even keel. Dealers from nearly every scrap center reported tightness in receipts. In some cases railroad scrap lists stayed light and it was believed the roads were holding on to older cars to fight off a shortage of bottoms.

Office of Price Stabilization has gone on record for cleanliness. What may have motivated passage of Amendment 11 to Ceiling Price Reg. 5 is OPS anger at the very few people who might have shipped bundles with concrete centers—or something like that.

OPS now insists that all grades of scrap must be free of dirt, non-ferrous metals, other foreign materials, and be unmarked by "excessive" rust and corrosion. It appears that mill inspectors had better don dark glasses or be dazzled by the gleaming carloads of washed and burnished scrap.

The order permits a loophole for allowing off-grade stuff to sneak into a shipment unintentionally.

Pittsburgh—Dealer scrap continues in relatively short supply. The freight car shortage is further handicapping scrap movement. Increased availability of production scrap is offsetting lack of dealer material. Railroad listings are light, indicating roads are keeping in service cars that ordinarily would be scrapped, due to the strong demand for bottoms. The cast market is still far from robust.

Chicago—Openhearth grades continued to move well and at firm prices, but other grades were not being warmly received. Inspection on electric furnace and blast furnace grades was rigid with a number of rejections reported. Electric furnace was moving at ceiling on some contracts, but some sellers were willing to move the material out of their yards at a lower price.

Philadelphia—Scrap market in this district is going along calmly at a consistent pace. Steel grades are moving well but consumers are getting fussier about quality. Cast demand is described as "just fair." Blast furnace material is not in much demand within the district and quantities are reported flowing to Pittsburgh at the Pittsburgh ceiling.

New York—Brokers and dealers here maintained that the market held a lot of power. Shipments were strong and steady. Demand was fair. Cast, of course, is still lazing along. Advent of an early winter could put peddlers into quicker hibernation—and some dealers are still complaining of short receipts. Blast furnace grades were reported moving at a nice clip.

Detroit—Dealer collections continue off. The feeling is that there is not a great deal of loose scrap metal lying around. Yards are generally bare except for turnings. Blast furnace grades are slow, but moving well enough to remain at ceiling. Market for openhearth and electric furnace grades is strong.

St. Louis—Movement of scrap iron continues very low. Not only are receipts from country dealers falling off, but offerings from railroads are extremely light. Result is that mills are cutting in on their inventories. There is nothing alarming in the situation at present, as the mills are well supplied, but if the supply continues low for the next 30 days it could be a serious matter. The steel strike, which has delayed repairs and remodeling, is believed to be an important factor in cutting the supply of scrap iron.

Cleveland—Shipments are slightly off but the market is steady. Dealers, already short on top grades, say the mills are pressing for electric furnace scrap. Cast market is spotty and consumers are setting the price. Malleable is also slow. Search for southern scrap is still active.

Birmingham—The scrap market in the South is in the doldrums. Northern mills are buying very little from this district and the largest southern consumer has been out of the market for 3 weeks. One local cast buyer paid \$48 for a few cars, then stopped buying. With this exception prices are unchanged. Dealers say very little scrap is coming into the yards, although they are willing to pay top prices.

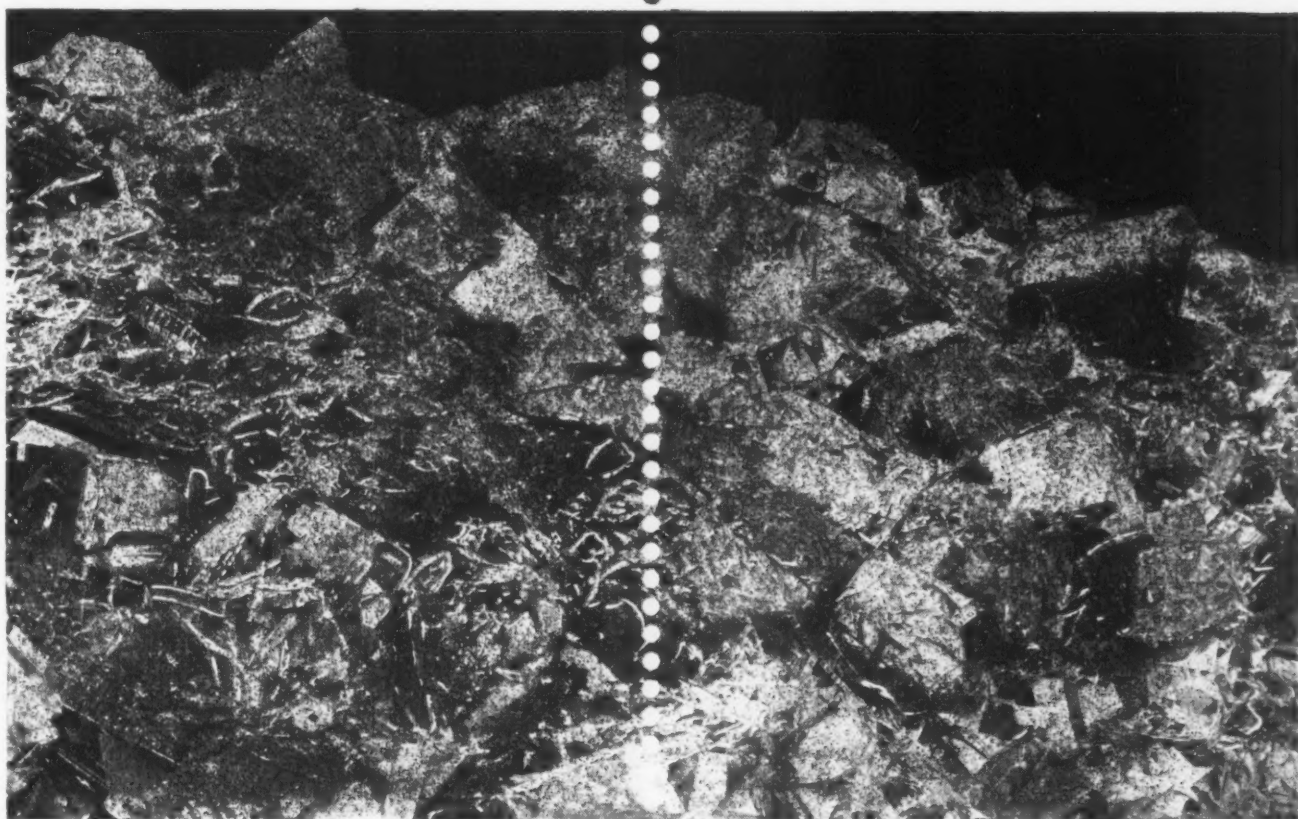
Cincinnati—Openhearth grades are restricted by consumers with well-stocked inventories. Rails, rail specialties and low phos are in short supply. Scrap clean-up has resulted in some easing of inspection but consumers still demand quality heavy stock. Unless the tight yard picture changes, dealers feel they will have trouble handling large tonnage orders in December, January and February. Cast and malleable are sluggish.

Boston—Cast iron scrap shows a very definite softening trend with mixed cupola off \$2 to a range of \$38 to \$39 per gross ton. Sales of heavy breakable are almost non-existent and the price is down in sympathy with cupola. Very good cast grades are in demand. Better grades of steel scrap are moving well.

Buffalo—Termination of a weekend strike at the Bethlehem Lackawanna plant bolstered sentiment among scrap dealers at the start of the week. Further extension, now in fourth week, of the embargo on shipments at the area's second largest mill consumer is also a blow to dealers. Mill is still engaged in unloading the influx of ore receipts. Scrap supplies at the present time are only fair, but top mills report substantial reserve stocks.

West Coast—Steelmaking scrap prices were unchanged but volume continued steady last week. Only noticeable price activity was in No. 1 cupola cast which went up \$1 in San Francisco to \$44 and up \$2.50 in Seattle to \$43. Movement was in small quantity, however, and due principally to distress selling. Most dealers are reluctant to sell now, having held out this long waiting for the price to go up.

specialists in stainless scrap



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October 23, 1952

Scrap Prices

Iron and Steel **SCRAP PRICES** (Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments.)

GRADES	OPS No.	Basing Points															
		Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Menasha	Sharon	Youngstown	Canton	Steubenville	Warren	Cleveland	Buffalo	Cincinnati	Middletown	Chicago
No. 1 bundles	1	\$44.00	\$44.00	\$44.00	\$43.00	\$42.50	\$42.00	\$41.00	\$41.00	\$41.00	\$41.00	\$41.00	\$41.00	\$41.00	\$41.00	\$41.00	\$41.00
No. 1 busheling	2	44.00	44.00	44.00	43.00	42.50	42.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00
No. 1 heavy melting	3	43.00	43.00	43.00	42.00	41.50	41.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
No. 2 heavy melting	4	43.00	43.00	43.00	42.00	41.50	41.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
No. 2 bundles	5	43.00	43.00	43.00	42.00	41.50	41.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Machine shop turnings	6	34.00	34.00	34.00	33.00	32.50	32.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Mixed borings and turnings	7	38.00	38.00	38.00	37.00	36.50	36.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Shoveling turnings	8	38.00	38.00	38.00	37.00	36.50	36.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Cast iron borings	10	38.00	38.00	38.00	37.00	36.50	36.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
No. 1 chemical borings	26	41.00	41.00	41.00	40.00	39.50	39.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00
Forge crops	11	51.50	51.50	51.50	50.50	50.00	49.50	48.50	48.50	48.50	48.50	48.50	48.50	48.50	48.50	48.50	48.50
Bar crops and plate	12	49.00	49.00	49.00	48.00	47.50	47.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00
Punchings and plate	14	46.50	46.50	46.50	45.50	45.00	44.50	43.50	43.50	43.50	43.50	43.50	43.50	43.50	43.50	43.50	43.50
Electric furnace bundles	15	46.00	46.00	46.00	45.00	44.50	44.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00
Cut struc., plate, 3 ft and less	16	47.00	47.00	47.00	46.00	45.50	45.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00
Cut struc., plate, 2 ft and less	17	49.00	49.00	49.00	48.00	47.50	47.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00
Cut struc., 1 ft and less	18	50.00	50.00	50.00	49.00	48.50	48.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00
Foundry steel, 2 ft and less	20	44.00	44.00	44.00	43.00	42.50	42.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00
Foundry steel, 1 ft and less	21	46.00	46.00	46.00	45.00	44.50	44.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00
Heavy trimmings	24	43.00	43.00	43.00	42.00	41.50	41.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
No. 1 RR heavy melting	RR 1	46.00	46.00	46.00	45.00	44.50	44.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00
Scrap rails, random lengths	RR 14	48.00	48.00	48.00	47.00	46.50	46.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Scrap rails, 3 ft and less	RR 16	51.00	51.00	51.00	50.00	49.50	49.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00
Scrap rails, 2 ft and less	RR 17	52.00	52.00	52.00	51.00	50.50	50.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00
Scrap rails, 18 in. and less	RR 18	54.00	54.00	54.00	53.00	52.50	52.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00
Revolving rails	RR 15	53.00	53.00	53.00	52.00	51.50	51.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Uncut tires	RR 20	48.00	48.00	48.00	47.00	46.50	46.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Cut tires	RR 21	51.00	51.00	51.00	50.00	49.50	49.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00
Cut bolsters and slide frame	RR 23	49.00	49.00	49.00	48.00	47.50	47.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00
RR specialties	RR 24, 26, 29	51.00	51.00	51.00	50.00	49.50	49.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00
Solid steel axles	RR 25	58.00	58.00	58.00	57.00	56.50	56.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00
No. 3 steel wheels	RR 27	51.00	51.00	51.00	50.00	49.50	49.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00
Unassorted	RR 35	40.08	40.08	40.08	39.00	38.50	38.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00

Cast Scrap Ceilings

Prices set by CPR 5, OPS

(F.o.b. all shipping points)

Grades	OPS No.	Price
Cupola cast	1	\$49.00
Charging box cast	2	47.00
Heavy breakable cast	3	45.00
Cast iron brake shoes	5	41.00
Stove plate	6	46.00
Clean auto cast	7	52.00
Unstripped motor blocks	8	43.00
Cast iron car wheels	9	47.00
Malleable	10	55.00
Drop broken mach'y cast	11	52.00

Ceiling price of clean cast iron foundry runout or prepared cupola drops is 75 pct of corresponding grade.

Under Ceiling Scrap Prices

Pittsburgh

Machine shop turnings	\$32.00
Mixed borings, turnings	32.00
Cast iron borings	\$35.00 to 35.50
No. 1 machinery cast	52.00
Heavy breakable cast	45.00
Malleable	55.00

Chicago

Low phos. forge crops	\$50.00 to \$51.00
Cut struc., plate, 3 ft & less	44.50 to 45.50
Cut struc., plate, 2 ft & less	46.50 to 47.50
Cut struc., plate, 1 ft & less	47.50 to 48.50
Machine shop turnings	30.00 to 31.50
Mixed borings, turnings	34.00 to 35.50
Shoveling turnings	34.00 to 35.50
Cast iron borings	34.00 to 35.50
Cupola cast	44.00 to 45.00
Heavy breakable cast	41.00 to 42.00
Malleable	51.00 to 52.00
Stove plate	42.00 to 43.00
Clean auto cast	48.00 to 50.00
Charging box cast	43.00 to 44.00
Drop broken mach'y	49.00 to 50.00
Unstripped motor blocks	36.00 to 38.00

Philadelphia Area

Clean cast chem. borings	\$36.50 to \$37.00
Cupola cast	47.00 to 48.00
Unstripped motor blocks	41.00 to 42.00
Charging box cast	45.00 to 46.00

Cleveland

Cast iron borings	\$34.00 to \$34.50
Stove plate	45.00 to 46.00
Malleable	54.00 to 55.00

Youngstown

Cast iron borings	\$35.00 to \$35.50
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Buffalo

No. 1 machinery cast	\$49.00 to \$50.00
No. 1 cupola cast	46.00 to 47.00

Birmingham

Shoveling turnings	\$30.00 to \$32.00
Cast iron borings	30.00 to 32.00
No. 1 cupola cast	46.00 to 47.00
Stove plate	41.50 to 42.50
Charging box cast	39.00 to 40.00
Heavy breakable	37.00 to 38.00
Drop broken machinery	46.00 to 47.00
Unstripped motor blocks	39.00 to 40.00

New York

Brokers' Buying prices per gross ton, on cars:	
Clean cast chem. borings	\$30.00 to \$30.50
No. 1 machinery cast	48.00 to 50.00
Mixed yard cast	43.00
Charging box cast	43.00 to 44.00
Heavy breakable cast	41.00 to 45.00
Unstripped motor blocks	36.00

Boston

Brokers' Buying prices per gross ton, on cars:	
Mixed cupola cast	\$38.00 to \$39.00
Heavy breakable cast	37.00 to 38.00
Stove plate	38.00 to 39.00
Unstripped motor blocks	30.00 to 31.00

Detroit

Brokers' Buying prices per gross ton, on cars:

No. 1 cupola cast	\$48.00
Heavy breakable cast	\$43.00 to 44.00
Stove plate	43.00 to 44.00
Cast iron brake shoes	39.00 to 40.00

Cincinnati

No. 1 cupola cast	\$49.00
Stove plate	46.00
Drop broken cast	\$51.00 to \$52.00

St. Louis

Charging box cast	\$43.00 to \$44.00
No. 1 cupola cast	43.00
Heavy breakable cast	41.00 to 42.00
Unstripped motor blocks	\$38.00

San Francisco

No. 2 heavy melting	\$31.00
No. 2 bundles	29.00
Machine shop turnings	17.00
No. 1 cupola cast	44.00

Los Angeles

No. 2 heavy melting	\$31.00
No. 2 bundles	29.00
Machine shop turnings	17.00
Shoveling turnings	20.00
No. 1 cupola cast	50.00

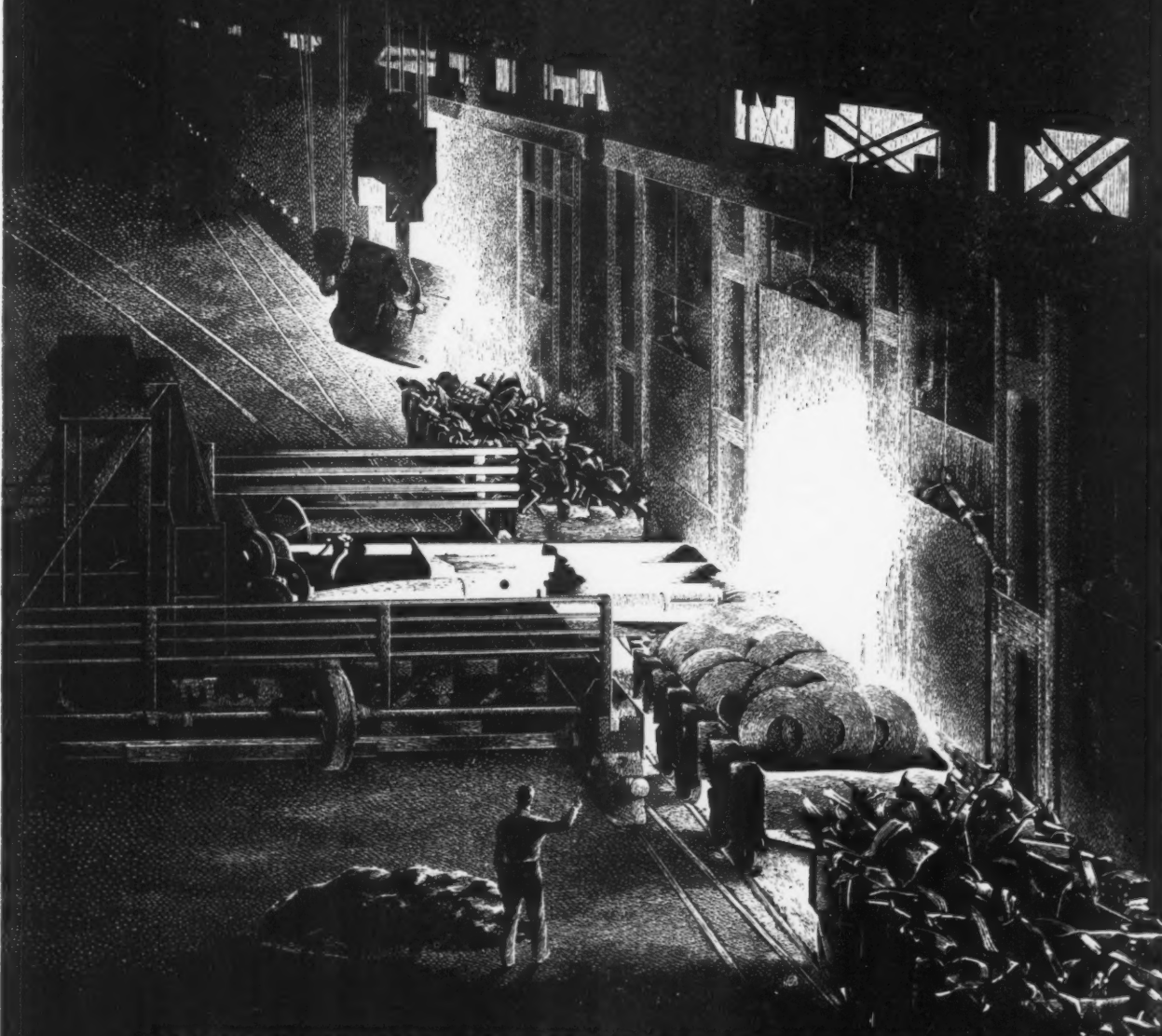
Seattle

No. 2 bundles	\$29.00
No. 1 cupola cast	43.00
Heavy breakable	35.50

Hamilton, Ont.

No. 1 hvy. melting	\$35.50
No. 1 bundles	35.50
No. 2 bundles	35.00
Mechanical bundles	33.50
Mixed steel scrap	31.50
Mixed borings, turnings	32.50
Rails, remelting	35.50
Rails, re-rolling	44.80
Bushelings	30.50
Bush, new fact. prep'd	33.50
Bush, new fact. unprep'd	32.50
Short steel turnings	32.50
Cast scrap	50.00

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Oct. 21 1952	Oct. 14 1952	Sept. 23 1952	Oct. 23 1951
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	3.775¢	3.775¢	3.775¢	3.60¢
Cold-rolled sheets	4.575	4.575	4.575	4.35
Galvanized sheets (10 ga.)	5.075	5.075	5.075	4.80
Hot-rolled strip	3.725	3.725	3.725	3.50
Cold-rolled strip	5.20	5.20	5.20	4.75
Plate	3.90	3.90	3.90	3.70
Plates wrought iron	9.00	9.00	9.00	7.85
Strains C-R strip (No. 302)	36.75†	36.75†	36.75†	36.75

Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.70
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.40
Special coated mfg. ternes	7.75	7.75	7.75	7.50

Bars and shapes: (per pound)				
Merchant bars	3.95¢	3.95¢	3.95¢	3.70¢
Cold finished bars	4.925	4.925	4.925	4.55
Alloy bars	4.675	4.675	4.675	4.30
Structural shapes	3.85	3.85	3.85	3.65
Stainless bars (No. 302)	31.50†	31.50†	31.50†	31.50
Wrought iron bars	10.05	10.05	10.05	9.50

Wire: (per pound)				
Bright wire	5.225¢	5.225¢	5.225¢	4.85¢

Rails: (per 100 lb)				
Heavy rails	\$3.775	\$3.775	\$3.775	\$3.60
Light rails	4.25	4.25	4.25	4.00

Semifinished Steel: (per net ton)				
Rerolling billets	\$59.00	\$59.00	\$59.00	\$56.00
Slabs rerolling	59.00	59.00	59.00	56.00
Forging billets	70.50	70.50	70.50	66.00
Alloy blooms, billets, slabs	76.00	76.00	76.00	70.00

Wire Rod and Skelp: (per pound)				
Wire rods	4.325¢	4.325¢	4.325¢	4.10¢
Skelp	3.55	3.55	3.55	3.35

† Add 4.7 pct.

Composite: (per pound)				
Finished steel base price	4.376¢	4.376¢	4.376¢	4.131¢

	Oct. 21 1952	Oct. 14 1952	Sept. 23 1952	Oct. 23 1951
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$60.69	\$60.69	\$60.69	\$57.97
Foundry, Valley	55.00	55.00	55.00	52.50
Foundry, Southern, Cin'ti	58.93	58.93	58.93	55.55
Foundry, Birmingham	51.38	51.38	51.38	48.88
Foundry, Chicago	55.00	55.00	55.00	52.50
Basic del'd Philadelphia	59.77	59.77	59.77	57.09
Basic, Valley furnace	54.50	54.50	54.50	52.00
Malleable, Chicago	55.00	55.00	55.00	52.50
Malleable, Valley	55.00	55.00	55.00	52.50
Charcoal, Chicago	78.34	78.34	78.34	70.56
Ferromanganese	226.25	226.25	226.25	186.25

† The switching charges for delivery to foundries in the Chicago district is \$1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy pages.

Composite: (per gross ton)				
Pig iron	\$55.26	\$55.26	\$55.26	\$52.72
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$43.00*	\$43.00*	\$43.00*	\$43.00*
No. 1 steel, Phila. area	41.50*	41.50*	41.50*	41.50*
No. 1 steel, Chicago	41.50*	41.50*	41.50*	41.50*
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	41.15*
Low phos., Youngstown	46.50*	46.50*	46.50*	46.50*
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	49.00†
No. 1 cast, Philadelphia	47.50	47.50	47.50	49.00†
No. 1 cast, Chicago	44.50	44.50	45.50	49.00†

* Basing pt., less broker's fee. † Shipping pt., less broker's fee.

Composite: (per gross ton)				
No. 1 heavy melting scrap	\$42.00	\$42.00	\$42.00	\$42.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	\$14.75	\$14.75	\$14.75	\$14.75
Foundry coke, prompt	17.75	17.75	17.75	17.75

Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.21 1/2†	\$1.21 1/2	\$1.21 1/2	\$1.03
Zinc, East St. Louis	13.50	13.50	13.75	19.50
Lead, St. Louis	13.80	13.80*	15.80	18.80
Aluminum, virgin ingot	20.00	20.00	20.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	59.58
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	39.00	39.00	39.00	42.00

* Revised. † Tentative.

Composite Price Notes

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Warehouse Price Notes

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1)500 to 1499 lb, (2)1500 to 3499 lb, (3)6000 lb or over, (4)450 to 1499 lb.

WARE HOUSES			Base price, f.o.b., dollars per 100 lb.															
Cities	City Delivery Charge	Sheets			Strip		Plates	Shapes	Bars		Alloy Bars							
		Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As rolled	Cold-Drawn A 4140 Annealed				
Baltimore	\$.20	5.81	7.17	8.42-9.57	6.42	.....	6.30-6.47	6.47	6.41	7.18-7.43	.....	.....	.....	.....	.....	.....
Birmingham	15	5.80	6.65	7.70 ¹	5.80	.....	6.10	5.95-6.71	5.80	8.25-8.40	.....	.....	.....	.....	.....	.....
Boston	20	6.48-6.52	7.35-7.52	8.59-8.74	6.55	8.50 ²	6.75-6.80	6.56-6.75	6.38-6.54	7.10-7.63	10.78	11.15-11.18	.....	.....	13.18	.....	
Buffalo	20	5.76-5.80	6.60-6.65	8.40-8.46	6.16-5.83	6.19	6.26-6.37	5.96-6.08	5.76-5.90	6.00-6.95	10.70	11.00-11.07	12.70	12.51-14.42	.....	.....
Chicago	20	5.80-5.81	6.65-6.72	8.05-8.52	5.84	.....	5.95-6.00	5.95-6.98	5.83-6.13	6.56-7.16	.....	10.65	11.07	12.45	.....	.....
Cincinnati	15	6.13	6.72	8.52	6.21	.....	6.47	6.42	6.13	7.16	.....	11.07	11.07	13.07	.....	.....
Cleveland	20	5.80-5.81	6.65-8.16	8.19-9.01	6.00	.....	6.12-6.22	6.28-6.33	5.89-6.98	6.66-7.21	10.79	10.79	12.79	.....	.....	.....
Denver	.....	7.17	7.43-7.69	8.90	.....	.....	7.37	7.50-7.80	7.61-7.71	8.24	.....	.....	.....	.....	.....	.....
Detroit	20	6.00-6.07	6.81-6.92	8.34	6.13	7.99	6.45-6.47	6.12-6.45	6.12-6.30	6.975-7.21	10.72	10.92	12.72	13.82	.....	.....
Houston	20	6.74-6.79	7.78-7.79	8.68	6.61-6.75	9.80	6.63-7.07	6.66-6.79	6.82-6.93	9.00-9.62	11.90	11.90	13.90	.....	.....	.....
Indianapolis del'd	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas City	20	6.47	7.31	8.50-8.72	6.51	8.07	6.62-6.67	6.62	6.50	7.57	11.15-11.90	11.45-12.20	13.13-13.88	13.43-14.18	.....	.....
Los Angeles	20	6.60	8.45-8.49	9.80-10.60	6.74-6.78	9.15	6.66-6.71	6.60-6.64	6.60-6.62	8.36-8.69	.....	12.95	14.60	.....	.....	.....
Memphis	10	6.56	.....	.....	6.60	.....	6.71	6.71	6.57-6.83	7.98-9.98	.....	.....	.....	.....	.....	.....
Milwaukee	20	5.97-5.98	6.82	8.22	6.00-6.01	.....	6.12-6.17	6.12	6.00	6.83-7.07	10.82	10.82	12.82	.....	.....	.....
New Orleans	15	6.28	7.12	.....	6.32	.....	6.43	6.43	6.31	7.85	.....	.....	.....	.....	.....	.....
New York	30	6.26-6.69	7.27-7.60	8.31 ³ -8.68	6.56-7.05	9.53	6.60-7.19	6.39-6.70	6.59-6.89	7.53-8.05	10.74-10.93	11.04-11.28	12.74-12.97	13.04-13.27	.....	.....
Norfolk	20	7.10	.....	.....	6.81	.....	6.64	7.25	6.44	8.45	.....	.....	.....	.....	.....	.....
Philadelphia	25	6.11-6.33	7.13-7.92	8.35-8.79	6.45-7.45	.....	6.24-6.86	6.17-6.42	6.42-6.68	7.45-7.69	10.57	10.79-11.02	12.79	12.79	.....	.....
Pittsburgh	20	5.80-5.81	6.65-8.45	8.05-9.97	5.94	.....	5.95-6.00	5.95-7.30	5.83-7.35	6.66-9.45	.....	10.65	12.65	.....	.....	.....
Portland	20	7.60-7.90	9.00-9.45	10.25	7.60-7.65	.....	7.30	7.30	7.35	9.45	.....	.....	.....	.....	.....	.....
Salt Lake City	20	8.30	.....	10.90 ⁴	8.45	.....	7.85	8.00	8.40	.....	.....	.....	.....	.....	.....	.....
San Francisco	15	6.80-6.90	8.23-10.40	9.70-9.90	6.79-9.70	9.25	7.10	6.70-7.19	6.65-6.70	8.40-8.70	11.85	11.85	14.40	.....	.....	.....
Seattle	20	7.46	8.46	9.60	7.39	.....	7.19	6.91	7.22	9.37	.....	.....	.....	.....	.....	.....
St. Louis	20	6.10-6.30	6.95-7.83	8.35-8.39	6.14	9.73	6.35-6.60	6.35-6.61	6.13-6.33	6.96-7.40	10.65	10.95	12.65	12.95	.....	.....
St. Paul	15	6.47	7.31	8.71	6.50	.....	6.61	6.61	6.49	7.32	.....	.....	.....	.....	.....	.....

How to find Fast Answers to metal finishing problems

Consult the Company that helps with all these finishes:

... plated ... organic ... conversion coatings

UNITED CHROMIUM offers you unusual cooperation on surface finishing problems. Unusual, because this aid is not limited to one type of finish. It covers metallic and organic coating systems, both decorative and functional. The service rendered in the application of Unichrome products for ordnance and civilian goods finishing is based on 25 years' experience in the field.

Such specialized yet extensive knowledge of coating systems and how to apply them can help you speed up selection of the right finish on your product, improve results or reduce costs. To illustrate:



LONGER LASTING CLEAR ENAMEL FOR BRIGHT FINISHES

Over 70 clear coatings were given year-long Florida exposure tests by a well known company. Most were baking types. Unichrome Coating A-140 was one of the few air-dry types. It was applied to a thickness of 0.4 mil, as against 0.8 for the others. Despite this, it was the coating that stood up best by far in the entire test group, being good as new at the end of the test. When applied to today's chromium or bright zinc finishes, such Unichrome Enamels assure extra durability and resistance to corrosion, and a higher quality product.

BRILLIANT, DURABLE FINISHES WITH ZINC PLATING

No question about the sales winning eye appeal of zinc plated products which have been chemically treated in Unichrome Clear Dip Solution. As little as .0002" to .0005" of zinc plate can be made bright as chromium by this treatment. The Unichrome Dip Finish is integral with the zinc and *stays* bright — resisting exposure, dulling and finger-marking. When handling is a factor, a Unichrome Clear Enamel can provide extra wear and corrosion resistance for the finish.

IMPROVED PROCESS MINIMIZES TODAY'S COPPER PLATING PROBLEMS

Unichrome Pyrophosphate Copper Process deposits smooth copper which needs little buffing, if at all — making it excellent for plating directly with chromium. Its moderate temperature permits use of plastic or rubber lined tanks formerly used for nickel plating. Containing no cyanide, the Unichrome Copper Bath minimizes the waste disposal problem.



COATINGS for METALS

UNITED CHROMIUM, INCORPORATED 100 East 42nd St., New York 17, N. Y.

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**STEEL
PRICES**

EAST

MIDDLE WEST

WEST

SOUTH

	INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL- ING	SHAPES STRUCTURALS		STRIP			
	Carbon Forging Net Ton	Alloy Net Ton	Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi. Str. Low Alloy	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
Bethlehem, Pa.					\$76.00 B3			3.90 B3	5.80 B3				
Buffalo, N. Y.			\$59.00 B3	\$70.50 B3, R3	\$76.00 B3, R3		4.675 B3	3.90 B3	5.80 B3	3.725 B3, R3	5.10 B3	5.70 B3	7.90 B3
Claymont, Del.													
Coatesville, Pa.													
Conschoecken, Pa.				\$77.50 A2	\$83.10 A2					4.125 A2		5.90 A2	
Harrisburg, Pa.													
Hartford, Conn.													
Johnstown, Pa.			\$59.00 B3	\$70.50 B3	\$76.00 B3			3.90 B3	5.80 B3	3.725 B3			
Newark, N. J.													
New Haven, Conn.											5.60 A5 5.85 D1		
Phoenixville, Pa.								6.10 P2					
Putnam, Conn.													
Sparrows Pt., Md.										3.725 B3	5.10 B3	5.70 B3	7.90 B3
Worcester, Mass.													
Trenton, N. J.											6.45 R4		
Alton, Ill.										4.20 L1			
Ashland, Ky.										3.725 A7			
Canton-Massillon, Ohio				\$70.50 R3	\$76.00 R3 \$78.60 T5								
Chicago, Sterling, Ill.			\$59.00 U1	\$70.50 U1, R3, W8	\$76.00 U1, R3, W8		4.675 U1	3.85 U1, W8	5.80 U1	3.725 A1, W8 4.725 N4	5.35 A1		
Cleveland, Ohio				\$70.50 R3							5.10 A5, J3		7.45 J3
Detroit, Mich.	\$56.00 R5	\$57.00 R5		\$73.50 R5	\$79.00 R5					4.025 G3 4.40 M2	5.30 G3 5.45 M2 5.60 D1 6.05 D2	6.30 G3	8.15 G3
Duluth, Minn.													
Gary, Ind. Harbor, Indiana			\$59.00 U1	\$70.50 U1	\$76.00 U1, Y1		4.675 J3	3.85 J3, U1	5.80 J3, U1 6.30 Y1	3.725 J3, U1, Y1	5.35 J3	5.65 J3, U1 6.15 Y1	
Granite City, Ill.													
Kokomo, Ind.											5.10 A7		
Middletown, Ohio													
Niles, Ohio										4.225 S1	5.80 S1	5.65 S1	7.30 S1
Sharon, Pa.													
Pittsburgh, Pa.	\$54.00 U1	\$57.00 U1	\$59.00 U1, J3	\$70.50 U1, J3	\$76.00 U1	3.55 U1 3.65 J3	4.675 U1	3.85 U1, J3	5.80 U1, J3	3.725 J3, A7 3.975 A3 4.225 S7, S9	5.10 J3, A7 5.45 A3 5.80 B4, S7		
Portsmouth, Ohio													
Weirton, Wheeling, Follansbee, W. Va.								4.10 W3		3.825 W3	5.10 W3	6.10 W3	7.95 W3
Youngstown, Ohio					\$76.00 Y1, C10	3.55 U1, R3			6.30 Y1	3.725 U1, Y1, R3	5.10 R3, Y1 5.70 C5 5.80 B4	5.65 R3, U1 6.15 Y1	7.30 R3 7.80 Y1
Fontana, Cal.	\$81.00 K1	\$83.00 K1	\$78.00 K1	\$89.50 K1	\$95.00 K1			4.45 K1	6.40 K1	4.975 K1	6.75 K1	6.55 K1	
Geneva, Utah				\$70.50 C7				3.85 C7	5.80 C7				
Kansas City, Mo.								4.45 S2		4.325 S2			
Los Angeles, Torrance, Cal.				\$89.50 B2	\$96.00 B2			4.45 C7, B2	6.35 B2	4.475 C7, B2	6.85 C1	6.40 B2	
Minnequa, Colo.								4.30 C6		4.775 C6			
San Francisco, Niles, Pittsburg, Cal.				\$89.50 B2				4.40 B2 4.56 P9	6.30 B2	4.475 C7, B2		6.40 B2	
Seattle, Wash.				\$89.50 B2				4.50 B2	6.40 B2	4.725 B2		6.65 B2	
Atlanta, Ga.										4.275 A8			
Birmingham, Ala. Alabama City, Ala.			\$59.00 T2	\$70.50 T2				3.85 T2, R3	5.80 T2	3.725 T2, R3			
Houston, Texas		\$65.00 S2		\$78.50 S2	\$84.00 S2			4.25 S2		4.125 S2			

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

IRON AGE

SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	STEEL PRICES
Hot-rolled 18 ga. & heavy.	Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Tens 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollowware Enameling 29 ga.	
3.775 B3	4.575 B3				5.675 B3	6.925 B3							Bethlehem, Pa.
													Buffalo, N. Y.
													Claymont, Del.
4.175 A2					5.925 A2								Coatesville, Pa.
													Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.325 B3				Johnstown, Pa.
													Newark, N. J.
													New Haven, Conn.
													Phoenixville, Pa.
3.775 B3	4.575 B3	5.075 B3			5.675 B3	6.925 B3	7.775 B3		4.425 B3	\$8.80 B3	\$7.50 B3		Putnam, Conn.
									4.625 A5				Sparrows Pt., Md.
									4.425 R4				Worcester, Mass.
									4.70 L1				Trenton, N. J.
3.775 A7		5.075 A7	4.925 A7										Alton, Ill.
		5.075 R3											Ashland, Ky.
3.775 W4					5.675 U1				4.325 A5, N4,R3				Canton-Massillon, Ohio
3.775 R3, J3	4.575 R3, J3		4.925 R3		5.675 R3, J3	6.925 R3, J3			4.325 A5				Chicago, Sterling, Ill.
3.975 G3	4.775 G3				6.225 G3	7.475 G3							Cleveland, Ohio
													Detroit, Mich.
													Duluth, Minn.
3.775 I3, U1, Y1	4.575 I3, U1, Y1	5.075 I3, U1	4.925 U1	5.475 U1	5.675 I3, U1 6.175 Y1	6.925 I3, U1 7.425 Y1			4.325 Y1	\$8.70 U1, I3, Y1	\$7.40 U1, I3	6.10 U1, Y1	Gary Ind. Harbor, Indiana
4.30 G2	5.275 G2	5.50 G2	5.625 G2								\$7.60 G2	6.30 G2	Granite City, Ill.
		5.475 C9											Kokomo, Ind.
	4.575 A7		4.925 A7	5.475 A7									Middletown, Ohio
4.175 S1					5.675 S1						\$7.40 R3		Niles, Ohio
3.775 U1, J3, A7 3.925 A3	4.575 U1, J3, A7	5.075 U1	4.925 U1		5.675 U1, J3	6.925 U1, J3	7.625 U1		4.325 A5	\$8.70 U1, J3	\$7.40 U1, J3	6.10 U1	Pittsburgh, Pa.
									4.525 P7				Portsmouth, Ohio
3.775 W3, W5	4.575 W3, W5	5.075 W3, W5		5.475 W3, W5	6.025 W3	7.275 W3				\$8.70 W3, W5	\$7.40 W3, W5	6.35 W5	Weirton Wheeling, Follansbee, W. Va.
3.775 U1, R3, Y1	4.575 R3, Y1	5.775 R1	4.925 Y1	6.05 E2	5.675 R3, U1 6.175 Y1	6.925 R3 7.425 Y1	5.65 E2 5.825 R1		4.325 Y1	\$8.70 R3			Youngstown, Ohio
4.725 K1	5.525 K1				6.625 K1	7.875 K1			5.125 K1				Fontana, Cal.
3.875 C7													Geneva, Utah
													Kansas City, Mo.
4.475 C7		5.825 C7						5.575 C7	5.125 C7, B2				Los Angeles, Torrance, Cal.
									4.575 C6				Minnequa, Colo.
4.475 C7	5.525 C7	5.825 C7							4.975 C7	\$9.45 C7	\$8.15 C7		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.775 T2, R3	4.575 T2	5.075 T2, R3			5.675 T2			4.925 R3	4.325 T2, R3	\$8.80 T2	\$7.50 T2		Birmingham, Ala. Alabama City, Ala.
									4.725 S2				Houston, Tex.

**STEEL
PRICES**

	BARS						PLATES				WIRE
	Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's Bright
EAST	Bethlehem Pa.			4.675 B3	6.00 B3	5.925 B3					
	Buffalo N. Y.	3.95 B3, R3	3.95 B3, R3	4.975 B5	4.675 B3, R3	6.00 B3, B5	5.925 B3	3.90 B3		5.95 B3	
	Claymont Del.						4.35 C4		5.35 C4		
	Coatesville Pa.						4.35 L4		5.75 L4		
	Conshehocken Pa.						4.35 A2	4.95 A2		6.20 A2	
	Harrisburg Pa.						6.50 C3	6.50 C3			
	Hartford Conn.			5.475 R3		6.45 R3					
	Johntown Pa.	3.95 B3	3.95 B3		4.675 B3		5.925 B3	3.90 B3		5.25 B3	5.225 B3
	Newark N. J.			5.375 W10		6.35 W10					
	New Haven Conn.										
	Phoenixville Pa.										
	Putnam Conn.			5.475 W10							
	Sparrows Pt. Md.		3.95 B3				3.90 B3		5.25 B3	5.95 B3	5.325 B3
	Worcester Mass.				6.35 A5						5.525 A5
	Trenton N. J.										
MIDDLE WEST	Alton Ill.	4.50 L1									5.45 L1
	Ashland Ky.						3.90 A7				
	Canton-Massillon	3.95 R3		4.925 R2, R3	4.675 R3 4.72 T5	5.99 T5 6.00 R2, R3					
	Chicago Sterling Ill.	3.95 U, W8, R3, 4.55 N4	3.95 R3 4.70 N4	4.925 A5, B5, W8, W10	4.675 R3 U1, W8	6.00 B5, L2, R3, W8, W10 6.05 A5	3.90 U1, W8	4.95 U1	5.25 U1	5.95 U1	5.225 A3, N4, R3 5.325 K2 5.475 W7
	Cleveland Ohio	3.95 R3	3.95 R3	4.925 A5, C13		6.00 C13 6.05 A5	5.925 R3	3.90 R3, J3	4.95 J3		5.225 A5, C13, R3
	Detroit Mich.	4.10 R5 4.30 G3		5.075 R5, P8 5.175 P3	4.825 R5 5.025 G3	6.15 R5, P8 6.20 P3	6.675 G3	4.45 G3		6.90 G3	
	Duluth Minn.										5.252 A5
	Gary Ind. Harbor Indiana	3.95 I3, U1, Y1	3.95 I3, U1, Y1	4.925 L2, M5, R3	4.675 I3, U1, Y1	6.90 L2, M5, R3, R5 6.425 Y1	5.925 I3, U1, 6.425 Y1	3.90 I3, U1, Y1	4.95 I3	5.25 U1	5.95 I3, U1 6.45 Y1
	Granite City Ill.						4.60 G2				
	Kokomo Ind.										5.325 C9
	Middletown Ohio										
	Niles Ohio Sharon Pa.						4.15 S1		5.70 S1	5.95 S1	
	Pittsburgh Pa.	3.95 U1, J3	3.95 U1, J3	4.925 A5, J3, W10, R3, C8	4.675 U1, J3	6.00 W10, C8 6.05 A5	5.925 U1, J3	3.90 U1, J3	4.95 U1, J3	5.25 U1, J3	5.95 U1, J3 5.225 A5, J3
	Portsmouth Ohio										5.625 P7
WEST	Wairton Wheeling Follansbee W. Va.	4.10 W3					3.90 W5 4.20 W3				
	Youngstown Ohio	3.95 U1, Y1, R3	3.95 U1, Y1, R3	4.925 Y1	4.675 U1, C10, Y1	6.00 C10, Y1	5.925 U1 6.425 Y1	3.90 U1, Y1, R3		5.95 R3 6.45 Y1	5.225 Y1
	Fantana Cal.	4.65 K1	4.65 K1		5.725 K1		6.975 K1	4.50 K1		6.20 K1	6.55 K1
	Geneva Utah							3.90 C7		5.95 C7	
	Kansas City Mo.	4.55 S2	4.55 S2		5.275 S2						5.825 S1
	Los Angeles Torrance Cal.	4.65 C7, B2	4.65 C7, B2	6.375 R3	5.725 B2		6.625 B2				6.175 C7, B1
	Minneapolis Colo.	4.40 C6	4.75 C6					4.70 C6			5.475 C6
	San Francisco Niles Pittsburg Cal.	4.65 C7, P9 4.70 B2	4.65 C7, P9 4.70 B2				6.675 B2				6.175 C6, C7
SOUTH	Seattle Wash.	4.70 B2	4.70 B2				6.675 B2	4.80 B2		6.85 B2	
	Atlanta Ga.	4.50 A8	4.50 A8								5.475 A8
	Birmingham Ala. Alabama City Ala.	3.95 T2, R3	3.95 T2, R3			5.925 T2	3.90 T2, R3			5.95 T2	5.225 T2, R3
	Houston Tex.	4.35 S2	4.35 S2		5.075 S2			4.30 S2			5.625 S2

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Key to Steel Producers

With Principal Offices

- 41 Acme Steel Co., Chicago
42 Alan Wood Steel Co., Conshohocken, Pa.
43 Allegheny Ludlum Steel Corp., Pittsburgh
44 American Cladmetals Co., Carnegie, Pa.
45 American Steel & Wire Div., Cleveland
46 Angell Nail & Chaplet Co., Cleveland
47 Armco Steel Corp., Middletown, O.
48 Atlantic Steel Co., Atlanta, Ga.
- 81 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
82 Bethlehem Pacific Coast Steel Corp., San Francisco
83 Bethlehem Steel Co., Bethlehem, Pa.
84 Blair Strip Steel Co., New Castle, Pa.
85 Bliss & Laughlin Inc., Harvey, Ill.
- C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia-Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Glassport, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
- D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
- E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.
- F1 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.
- G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
- H1 Hanna Furnace Corp., Detroit
- I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland
- J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
- K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
- L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.
- M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.
- N1 National Supply Co., Pittsburgh
N2 National Tube Co., Pittsburgh
N3 Niles Rolling Mills Co., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
- O1 Oliver Iron & Steel Co., Pittsburgh
- P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh

- P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.

- R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div. Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co. (John A.), Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit

- S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sloss Sheffield Steel & Iron Co., Birmingham
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Sweet's Steel Co., Williamsport, Pa.
S11 Seidelhuber Steel Rolling Mills, Seattle

- T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Birmingham
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Steel Co., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.

- U1 United States Steel Co., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.

- W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh

- Y1 Youngstown Sheet & Tube Co., Youngstown

MERCHANT WIRE PRODUCTS

	Standard & Coated Nails Woven Wire Fence 9-15½ ga.	Fence Posts	Single Loop Bale Ties	Twisted Barbless Wire	Galv. Barbed Wire	Merch. Wire Anvil	Merch. Wire Gal
Fab Mill	Col	Col	Col	Col	Col	Col	Col
Alabama City R3†	118	135	132	144	6.075	6.325	
Aliquippa Pa J3	127	141		148	6.075	6.525	
Atlanta A8	130	140	135	149	6.325	6.675	
Bartonsville K2	127	139	140	148	6.075	6.50	
Buffalo W6							
Chicago N4*	118	137	132	146	6.075	6.425	
Cleveland A6							
Cleveland A5					6.075	6.225	
Crawfordsville M4	130	140	134	149	6.175	6.55	
Donora Pa A5*	118	133	132	142	6.075	6.225	
Duluth A5*	118	133	132	142	6.075	6.225	
Fairfield Ala T2*	118	133	132	142	6.075	6.225	
Houston S2	135	147		156	6.475	6.925	
Johnston Pa B3	127	148	149			6.575	
Joliet Ill A5*	118	133	132	142	6.075	6.225	
Kokomo Ind C9			142		6.175	6.425	
Los Angeles B2					7.025		
Kansas City S2	139		144	160	6.675	7.125	
Minnequa C6*	123	146	138	153	6.325	6.70	
Monessen P6			136				
Moline Ill R3	137	156	156	162	6.025	7.125	
Pittsburgh Cal C7*	127	138		147	6.075	6.45	
Pittsburgh P7	132						
Rankin Pa A5*	118	133		142	6.075	6.225	
Sa. Chicago R3†	118	135	140	144	6.075	6.325	
S. San Fran C6			156	167	6.025	7.40	
Sparrows Pt B3	129		134	151		6.675	
Struthers O Y1†					6.075	6.475	
Terrance Cal C7*	138				7.025		
Worcester A5*	124				6.375	6.525	
Williamsport Pa S10							

* Cut Nails carloads base \$7.80 per 100 lb. (less 20¢ to jobbers) at Conshohocken, Pa. (A2) Wheeling W. Va. (W5) \$7.80.

* Add 45¢ per 100 lb. on Std. & Coated Nails.

† Zinc extra if not included on Galv. Merch. Wire.

‡ Galv. Merch. Wire based on 15¢ Zinc.

STAINLESS STEELS

Base price, cents per lb., f.o.b. mill. Add 4.7¢ per

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs, billets, rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs, die blocks, rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets, forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars, wires, structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip, hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip, cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—Sheets Midland, Pa., C11 Brackenridge, Pa., A3 Butler, Pa., A7 McKeesport, Pa., U1 Washington, Pa., W2 (type 316 add 4.5¢) J2 Baltimore, E1 Middletown, O., A7 Massillon, O., R3 Gary, U1 Bridgeville, Pa., U2 New Castle, Ind., I2 Ft. Wayne, J4 Lockport, N. Y., R4.

Strip Midland, Pa., C11 Cleveland, A5 Carnegie, Pa., S9 McKeesport, Pa., F1 Reading, Pa., C2 Washington, Pa., W2 (type 316 add 4.5¢) W. Leechburg, Pa., A3 Bridgeville, Pa., U2 Detroit, M2 Canton Massillon, O., R3 Middletown, O., A7 Harrison, N. J., D3 Youngstown, C5 Lockport, N. Y., S4 Sharon, Pa., S1 (type 301 add 1/4¢) Butler, Pa., A7 Wallingford, Conn., W1.

Bars Baltimore, A7 Duquesne, Pa., U1 Munhall, Pa., U1 Reading, Pa., C2 Titusville, Pa., U2 Washington, Pa., J2 McKeesport, Pa., U1, F1 Bridgeville, Pa., I2 Dunkirk, N. Y., A3 Massillon, O., R3 Chicago, U1 Syracuse, N. Y., C11 Watervliet, N. Y., A3 Waukegan, A5 Lockport, N. Y., S4 Canton, O., T5 Ft. Wayne, J4.

Wires Waukegan, A5 Massillon, O., R3 McKeesport, Pa., F1 Ft. Wayne, J4 Harrison, N. J., D3 Baltimore, A7 Dunkirk, A3 Monessen, P1 Syracuse, C11 Bridgeville, U2.

Structurals, Baltimore, A7 Massillon, O., R3 Chicago, Ill., J4 Watervliet, N. Y., A3 Syracuse, C11.

Plates Brackenridge, Pa., A3 (type 416 add 1/4¢) Butler, Pa., A7 Chicago, U1 Munhall, Pa., U1 Midland, Pa., C11 New Castle, Ind., I2 Lockport, N. Y., S4 Middletown, A7 Washington, Pa., J2 Cleveland, Massillon, R3.

Forged discs, die blocks, rings Pittsburgh, C11 Syracuse, C11 Ferndale, Mich., A3 Washington, Pa., J2.

Forging billets Midland, Pa., C11 Baltimore, A7 Washington, Pa., J2 McKeesport, F1 Massillon, Canton, O., R3 Watervliet, A3 Pittsburgh, Chicago, U1; Syracuse, C11.

ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 series.

WASHINGTON STEEL—Slightly lower on 300 series except where noted.

Miscellaneous Prices

PIPE AND TUBING

Base discounts f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD														SEAMLESS					
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2-3 In.		3 1/2-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																				
Sparrows Pt. B3	30.5	8.25	33.5	12.25	35.5	15.75	36.5	16.25	37.0	17.25	37.5	17.75	38.0	18.25						
Youngstown R3	32.5	1.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25						
Fontana K1	21.0	1.25	24.0	2.75	26.5	6.25	27.0	6.75	27.5	7.75	28.0	8.25	28.5	8.75						
Pittsburgh J3	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	24.0	2.25	27.0	5.75	29.0	7.75
Alton Ill. L1	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25						
Sharon M3	32.5	9.25	35.5	13.25	38.0	16.25	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.25						
Pittsburgh N1	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0		27.0		29.0	
Wheeling W5	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25						
Wheeland W4	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75						
Youngstown Y1	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
Indiana Harbor Y1	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25						
Lorain N2	32.5	15.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
E&FRA STRONG																				
PLAIN ENDS																				
Sparrows Pt. B3	30.25	9.5	34.25	13.5	36.25	17.0	36.75	17.5	37.25	18.5	37.75	19.0	38.25	19.5						
Youngstown R3	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5						
Fontana K1	20.75		24.75		26.75		27.25		27.75		28.25		28.75							
Pittsburgh J3	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	23.75	2.0	27.75	6.5	31.25	10.0
Alton Ill. L1	29.25	8.5	33.25	12.5	35.25	16.0	35.75	16.5	36.25	17.5	36.75	18.0	37.25	18.5						
Sharon M3	32.25	10.5	36.25	14.5	38.25	17.5	38.75	18.0	39.25	18.5	39.75	19.0	40.25	19.5						
Pittsburgh N1	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75		27.75		31.25	
Wheeling W5	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5						
Wheeland W4	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0						
Youngstown Y1	32.25	11.5	36.25	15.5	37.75	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	22.5	23.75	4.5	27.75	8.5	31.25	12.0
Indiana Harbor Y1	31.25	10.5	35.25	14.5	37.25	17.5	37.75	18.5	38.25	19.5	38.75	20.0	39.25	20.5						
Lorain N2	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	4.5	27.75	8.5	31.25	12.0

Galvanized discounts based on zinc, at 17¢ per lb. East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 1/2 pt. Calculate discounts on even cents per lb. of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb. use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only butt-weld and seamless, 1 pt. higher discount. Plain ends, butt-weld and seamless, 3 in. and under. 3/4 pts. higher discount. Butt-weld jobbers' discount, 5 pct. St. Louis zinc price now 13.5¢.

COKE

Furnace, beehive (f.o.b. oven)	Net-Ton
Connellsville, Pa.	\$14.60 to \$15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$17.50 to \$18.00
Foundry, oven coke	
Buffalo, del'd	\$26.50
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	21.80
Seaboard, N. J., f.o.b.	23.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Palmerville, Ohio, f.o.b.	21.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	27.00
Lone Star, Tex., f.o.b.	18.50

ELECTRICAL SHEETS

22 Ga. H-R cut length	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
F.o.b. Mill Cents Per Lb.							
Beech Bottom W5	7.85	9.10	9.90	10.45	11.00	11.70	
Brackenridge A3	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Granite City G2	8.55	9.80					
Ind. Harbor J3	7.35	7.85	9.10				
Mansfield E2	7.35	7.85	9.10	9.90			
Niles, O. N3	7.35	7.85					
Vandergrift U1	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Warren, O. R3	7.35	7.85	9.10				
Zanesville A7	7.35	7.85	9.10	9.90	10.45	11.00	11.70

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	\$105.30 to \$108.80
6 to 24-in., del'd N.Y.	108.50 to 109.50
6 to 24-in., Birmingham	91.50 to 96.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	\$123.00 to \$130.00
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	23.93	28.14	23.19	27.28
	2 1/2	12	32.17	37.83	31.19	36.67
	3	12	35.78	42.11	34.69	40.82
	3 1/2	11	44.72	52.65	43.36	51.05
	4	10	55.52	65.31	53.83	63.32
National Tube	2	13	22.81	27.94	22.23	
	2 1/2	12	31.28	38.31	30.51	
	3	12	35.87	43.93	34.98	
	3 1/2	11	42.56	52.12		
	4	10	54.02	66.16		
Pittsburgh Steel	2	13		28.58		
	2 1/2	12	32.16	39.19		
	3	12	36.87	44.93		
	3 1/2	11	43.76	53.32		
	4	10	55.54	67.68		

C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, Conn. S7					
Carnegie, Pa. S9	7.65	8.25	10.20	12.50	
Cleveland A5	5.10	7.30	8.25	10.20	12.50
Detroit D1	6.45	7.50	8.810		
New Castle, Pa. B4	5.80	7.65	8.25	10.20	
New Haven, Conn. D1	7.70	7.60	8.20		
Sharon, Pa. S1	5.80	7.65	8.25	10.20	12.50
Trenton N. J. R4		7.95	8.55	10.50	12.80
Wornton W. Va. W3	5.80	7.65	8.25	10.20	12.50
Worcester, Mass. A5	5.40	7.60	8.55	10.50	12.80
Youngstown C5		7.65	8.25	10.20	12.50

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bl. Furnace Silvery	Low Phos. Charcoal
Bethlehem B3	56.50	57.00	57.50	58.00			
Birmingham R1	50.88	51.38					
Birmingham W9	50.88	51.38					
Birmingham S5	50.88	51.38					
Buffalo R1	54.50	55.00	55.50				
Buffalo H1	54.50	55.00	55.50			66.75	
Buffalo W6	54.50	55.00	55.50				
Chicago I4	54.50	55.00	55.00	55.50			
Cleveland A5	54.50	55.00	55.00	55.50	59.50		
Cleveland R3	54.50	55.00	55.00				
Danversfield, Tex. L3	50.50	51.00	51.00				
Duluth I4	54.50	55.00	55.00	55.50			
Erie I4	54.50	55.00	55.00	55.50			
Everett, Mass. M6		59.25	59.75				
Fontana K1	60.50	61.00					
Genese, Utah C7	54.50	55.00					
Granite City, Ill. K3	56.40	56.90	57.40				
Hubbard, Ohio Y1	54.50	55.00	55.00				
Ironton, Utah C7	54.50						
Jackson, Ohio J1 G1						65.50	
Lyle, Tenn. T3						68.50	
Minnequa C6	56.50	57.50	57.50				
Monessen P6	56.50						
Neville Island P4	54.50	55.00	55.00	55.50			
Pittsburgh U1	54.50		55.00	55.50			
Sharpville S3	54.50	55.00	55.00	55.50			
Steelton B3	56.50	57.00	57.50	58.00	62.50		
Swedeland A2	58.50	59.00	59.50	60.00			
Toledo I4	54.50	55.00	55.00	55.50			
Troy, N. Y. R3	56.50	57.00	57.50		62.50		
Youngstown Y1	54.50	55.00	55.00	55.50			
N. Tonawanda, N. Y. T1		55.00	55.50				

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct. silicon over base, (1.75 to 2.25 pct. except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.20 pct. manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct. nickel, \$1 for each additional 0.25 pct. nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct. and over. Silvery iron: Add \$1.50 per ton net for each 0.50 pct. silicon over base (6.01 to 6.50 pct.) up to 17 pct. \$1 per ton for 0.75 pct. or more phosphorus, manganese as above. Bessemer ferro-silicon prices are \$1 over comparable silvery iron.



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ZIRCONIUM METAL

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Executive and Sales Offices: 111 BROADWAY, NEW YORK CITY
General Offices, Works and Research Laboratories: NIAGARA FALLS, N. Y.

*TAM is a registered trademark.

October 23, 1952

Miscellaneous Prices

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb.	No. 1 Std. Rails	Light Rails	Juni Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U/I	3.775	4.25	4.925				
Chicago R3				6.65			
Cleveland R3							
Ensley T2	3.775	4.25					
Fairfield T2		4.25		6.65		4.775	
Gary U/I	3.775	4.25				4.775	
Ind Harbor T3	3.775		4.925	6.65		4.775	
Johnstown B3		4.25					
Joliet U/I		4.25	4.925				
Kansas City S2							
Lackawanna B3	3.775	4.25	4.925			4.775	
Labanon B1				6.65			
Minnequa C6	3.775	4.75	4.925	6.65		4.775	9.85
Pittsburgh R3							
Pittsburgh O/I							
Pittsburgh P3				6.65			
Pittg. Cal C7						4.925	
Seattle B2				7.15		4.925	
Steelton B1	3.775		4.925			4.775	
Struthers Y/I				6.65			
Tarrance C7						4.925	
Youngstown R3				6.65			

TOOL STEEL

F.o.b. mill
Add 4.7 pct

W	C	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.505
18	4	1	—	5	\$2.13
18	4	2	—	—	\$1.65
1.5	4	1.5	8	—	\$1.04
6	4	2	6	—	\$6.56
High-carbon chromium					\$3.56
Oil hardened manganese					35¢
Special carbon					32.5¢
Extra carbon					27¢
Regular carbon					23¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb. higher. West of Mississippi, 5.5¢ higher.

CLAD STEEL

Add 4.7 pct

Stainless-carbon	Plate	Sheet
No. 304 20 pct.		
Cotescville, Pa. L4	*29.5	
Washington, Pa. J2	*29.5	
Claymont, Del. C4	*28.00	
Conshohocken, Pa. A2		*27.50
New Castle, Ind. J2	*29.77	*26.24
Nickel-carbon		
10 pct Cotescville, Pa. L4	32.5	
Inconel-carbon		
10 pct Cotescville, Pa. L4	40.5	
Monel-carbon		
10 pct Cotescville, Pa. L4	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. A4		77.00
Aluminized steel sheets, hot dip, Butler, Pa. A7		7.75

* Includes annealing and pickling, or sandblasting.

ELECTRODES

Cents per lb., f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in. in.	Length in. in.	Cents Per lb.
GRAPHITE		
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2 1/2	24, 30	23.15
2	24, 30	25.36
CARBON		
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	34, 90	8.03
17	30, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

FLUORSPAR

Washed gravel, f.o.b. Roselair, Ill.
Price, net ton; Effective CaF₂ content:
70% or more \$43.00
60% or less 40.00

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

	Pct Off List		
	Less	Less	
	Keg.	Keg.	K
	Reg.	Hvy.	
1/2 in. & smaller	15	28 1/2	15
9/16 in. & 5/8 in.	12	25	6 1/2
3/4 in. to 1 1/2 in.			21
Inclusive	9	23	1
1 1/2 in. & larger	7 1/2	22	1

Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	16 1/2	29 1/2	6 1/2	21
3/4 in. to 1 1/2 in.				
Inclusive	12	35	2	17 1/2
1 1/2 in. & larger	8 1/2	23	2	17 1/2

Nuts, Cold Punched—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	23	35	17 1/2	30 1/2
3/4 in. to 1 1/2 in.				
Inclusive	19 1/2	31 1/2	12	25
1 1/2 in. & larger	8 1/2	23	2	17 1/2

Nuts, Semi-Finished—Hexagon

	Reg.	Hvy.
1/2 in. & smaller	35	45
9/16 in. & 5/8 in.	23	35
3/4 in. to 1 1/2 in.		
Inclusive	24	36
1 1/2 in. & larger	13	26
Light		
7/16 in. & smaller	35	45
1/2 in. thru 5/8 in.	28 1/2	39 1/2
3/4 in. to 1 1/2 in.		
Inclusive	26	37

Stove Bolts

Pct Off List

Packaged, steel, plain finished	48—10
Packaged, plain finish	31—10
Bulk, plain finish	62

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb. net. For black oil finish, add 2¢ per lb. net.

Rivets

Base per 100 lb.

1/2 in. & larger	\$7.85
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Cap and Set Screws

(In bulk)

Pct Off List

Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 5/8 in. x 6 in., SAE 1020, bright	54
1/4 in. thru 1 in. up to & including 6 in.	45
1/4 in. thru 5/8 in. x 6 in. & shorter	
high C double heat treat	46
1/4 in. thru 1 in. up to & including 6 in.	41
Milled studs	35
Flat head cap screws, listed sizes	16
Fillister head cap, listed sizes	34
Set screws, sq. head, cup point, 1 in. diam. and smaller x 6 in. & shorter	53

Machine and Carriage Bolts

Pct Off List

	Less	Case	C
1/2 in. & smaller x 6 in. & shorter	15	28 1/2	
9/16 in. & 5/8 in. x 6 in. & shorter	18 1/2	30 1/2	
3/4 in. & larger x 6 in. & shorter	17 1/2	29 1/2	
All diam. longer than 6 in.	14	27 1/2	
Lag, all diam. x 6 in. & shorter	23	35	
Lag, all diam. longer than 6 in.	21	33	
Plow bolts	34		

REFRACTORIES

Fire Clay Brick

Carloads, per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5)	\$94.60
No. 1 Ohio	88.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	88.00
No. 2 Ohio	79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50)	13.75

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$94.60
Chilids, Pa.	99.00
Hays, Pa.	100.10
Chicago District	104.50
Western Utah and Calif.	111.19
Super Duty, Hays, Pa., Athens, Tex., Chicago	111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	16.50
Silica cement, net ton, bulk, Hays, Pa.	18.70
Silica cement, net ton, bulk, Ensley, Ala.	17.60
Silica cement, net ton, bulk, Chicago District	17.60
Silica cement, net ton, bulk, Utah and Calif.	24.70

Chrome Brick

Per Net Ton

Standard chemically bonded Balt.	
Chester	\$82.00

Magnesite Brick

Standard, Baltimore	\$104.00
Chemically bonded, Baltimore	93.00

Grain Magnesite St. %-in. grains

Domestic, f.o.b. Baltimore	
In bulk fines removed	\$62.70
Domestic, f.o.b. Chewalah, Wash., in bulk	36.80
In sacks	41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢...\$13.75

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 26, 1952

	Gross Ton
Old range, bessemer	\$9.45
Old range, nonbessemer	9.30
Mesabi, bessemer	9.20
Mesabi, nonbessemer	9.05
High phosphorus	9.05

After adjustments for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in Lake vessel rates, upper Lake rail freights, dock handling charges and taxes thereon.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f.	
New York, ocean bags	10.9¢
Canadian sponge iron, del'd.	
In East	12.0¢
Domestic sponge iron, 98+%	
Fe, carload lots	15.5¢ to 17.0¢
Electrolytic iron, annealed	
99.5+% Fe	44.0¢
Electrolytic iron, unannealed	
minus 325 mesh, 99+%	60.0¢
Hydrogen reduced iron, minus 300 mesh, 98+%	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+%	83.0¢ to \$1.48
Aluminum	31.5¢
Brass, 10 ton lots	30.00¢ to 33.25¢
Copper, electrolytic, 10.75¢ plus metal value	
Copper, reduced	10.00¢ plus metal value
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99%	
min., and quantity, del'd	33.50
Lead	7.5¢ to 12.0¢ plus metal value
Manganese	57.0¢
Molybdenum, 99%	27.75
Nickel, unannealed	88.0¢
Nickel, annealed	95.0¢
Nickel, spherical, unannealed	92.0¢
Silicon	38.5¢
Solder powder	7.0¢ to 9.0¢ plus met. value
Stainless steel, 302	83.00¢
Stainless steel, 316	\$1.10
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	\$6.00
Zinc, 10 ton lots	23.0¢ to 30.5¢

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**COLD ROLLED
STRIP STEEL**

$\frac{1}{2}$ " to 19" Wide
.002 to .500 Thick

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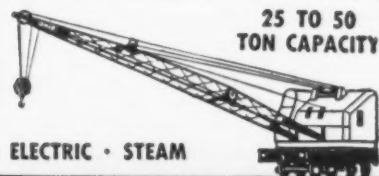
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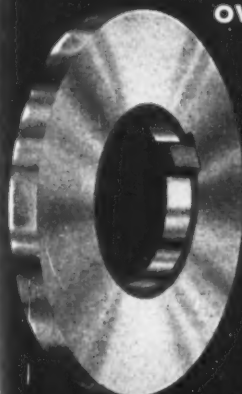
25 TO 50
TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS, OHIO

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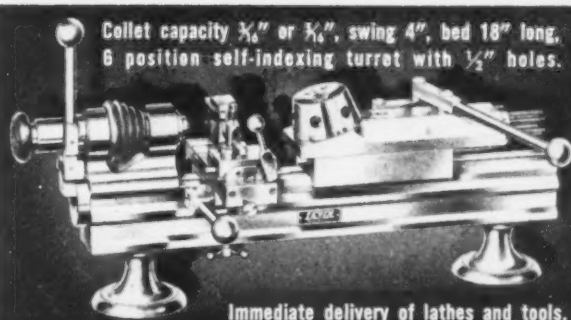
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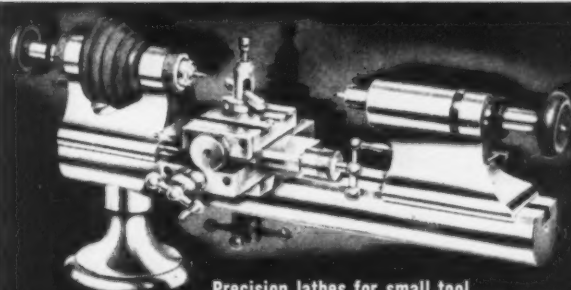


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6 position self-indexing turret with $\frac{1}{2}$ " holes.

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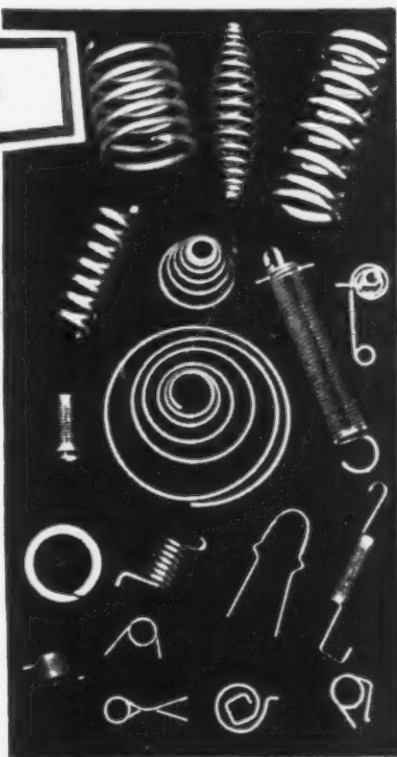


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and instrument work. Complete line of accessories.

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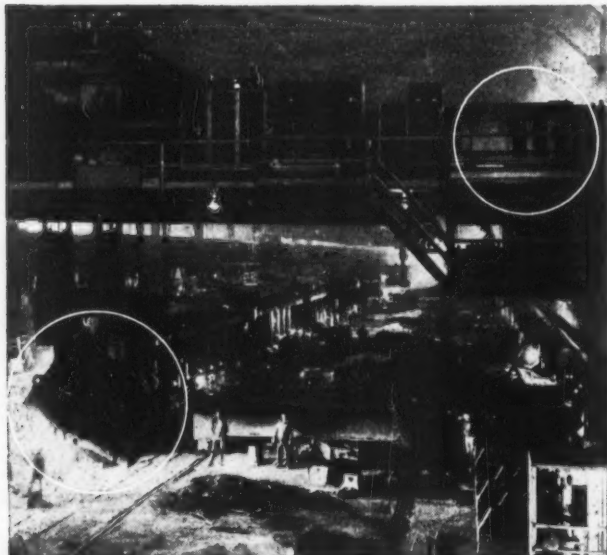
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MANUFACTURER**

Uses **DRAVO**

CRANE CAB COOLERS

IN OPEN HEARTH OPERATIONS



**CAB TEMPERATURE REMAINS CONSTANT;
DUSTS, FUMES, GASES, DIRT ELIMINATED**

In open hearth charging operations, crane cab operators are subject to heat from 135° to 150° F., plus such nuisances as dusts, fumes, gases and dirt. To eliminate such unpleasant working conditions, this large tube manufacturer has installed Dravo Crane Cab Coolers on open hearth charging cranes.

Results: cab temperatures constant at 80° to 85° F., winter or summer; healthier workers and more efficient operations.

**CRANE CAB COOLERS HAVE LONG SERVICE
LIFE, PROVIDE YEAR-ROUND AIR CONDITIONING**

Dravo Crane Cab Coolers are ruggedly constructed, factory assembled and pretested to provide years of more-than-satisfactory service. All equipment in the unit is readily accessible with ample space for quick and efficient maintenance.

In the various air conditioning functions the crane cab cooler not only filters the air, removes dust, dirt and fumes, but heats the cab in winter, cools it in summer and provides constant ventilation the year around.

**AVAILABLE IN SINGLE UNIT OR
IN SPLIT-TYPE UNIT; IMMEDIATE DELIVERY**

Dravo Crane Cab Coolers are built in two models—the self-contained unit, mounted on any available space on the crane and the new split-type unit where the condenser section is mounted on the crane, with the conditioning section in the cab.

The Dravo Crane Cab Cooler can be easily and quickly installed on any type of crane with a minimum of down-time required. Units are available now! Write for more information—or phone the nearest Dravo Office and have our representative call on you.



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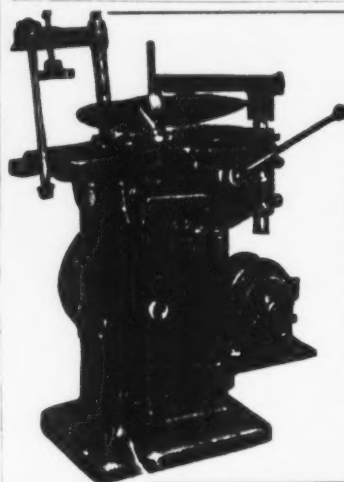
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**THE CLEVELAND
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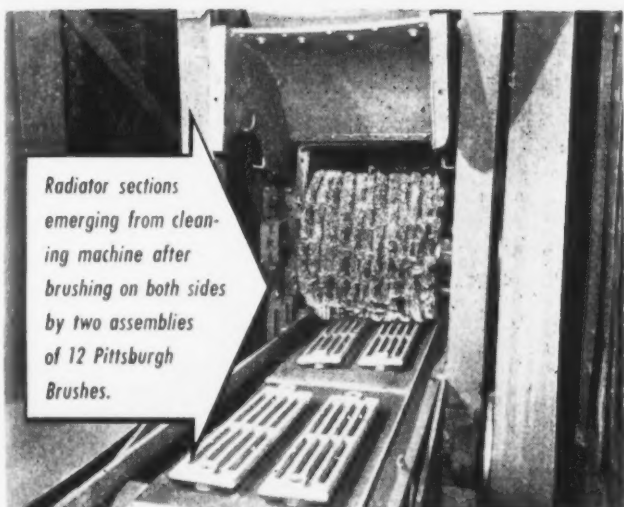
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General Office: BELLEVILLE 9, N. J.



Pittsburgh Brushes can help you solve problems like these!

Cleaning Narrow Spaces—National Radiator Company, Johnstown, Pa., cleans 30,000 radiator sections a week! To insure a perfect final finish, even the narrowest spaces must be absolutely clean prior to assembly. Pittsburgh engineers were asked to design a brush that would reach these spaces and would fit National's existing machine. Successful? National reports: "Pittsburgh Brushes do a better job of cleaning and are more economical!"

Preparing Chills—At Continental Foundry & Machine Co., East Chicago, Indiana, chills used to cast iron rolls must be cleaned of the oxidized metal remaining from previous usage, as well as dirt and grease accumulated in storage. After experimenting with other brushes, Continental chose Pittsburgh because they "do the job better and stand up longer than any previously used!"

Improving Original Equipment—The Sommer and Maca Glass Machinery Co., Chicago, Illinois, uses Pittsburgh Brushes in the automatic washing machines they manufacture. Brushes formerly used simply didn't have the over-all density pattern needed. Pittsburgh engineers studied the problem and designed a brush which Sommer and Maca approved "because of (its) denser bristle pattern and lower cost."

WRITE TODAY FOR FREE BOOKLET!

Write today for a free copy of our booklet that shows, through actual case histories, how Pittsburgh cuts brushing costs. Address: PITTSBURGH PLATE GLASS COMPANY, Brush Div., Dept. W10, 3221 Frederick Ave., Baltimore 29, Maryland.



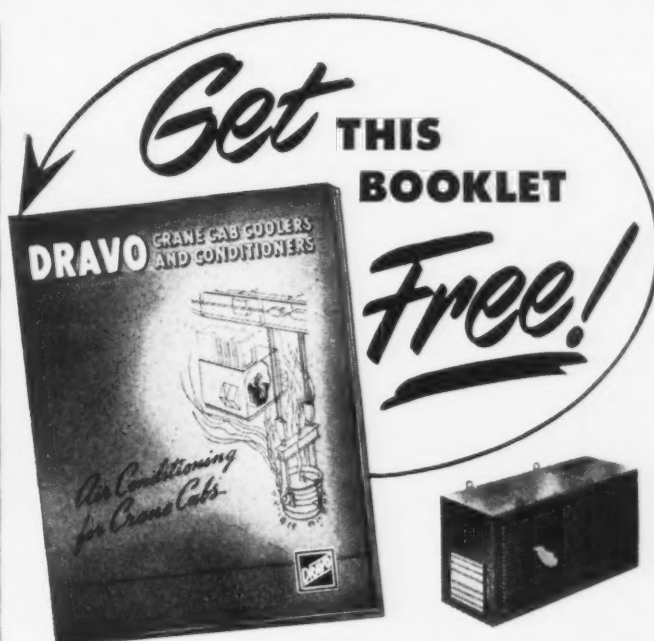
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Ferroalloy Prices

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk in carloads delivered. (65-72% Cr, 2% max. Si.)

0.05% C	30.50	0.20% C	29.50
0.10% C	30.00	0.50% C	29.25
0.15% C	29.75	1.00% C	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			28.00
62-66% Cr, 4-6% C, 6-9% Si			22.60

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% Max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	\$1.14
0.50% max. C	1.10
9 to 11% C	1.08

Low Carbon Ferrochrome Silicon

(Cr 34-41% Si 42-49% C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed: lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, dump delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.	
Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

CM52

Contract price, cents per lb of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	20.75
Less ton lots	22.00

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50
Less ton lots	17.75

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O.	\$225
F.o.b. Johnstown, Pa.	\$227
F.o.b. Sheridan, Pa.	\$225
F.o.b. Etta, Clairton, Pa.	\$228

Add \$2.80 for each 1% above 82% Mn, subtract \$2.80 for each 1% below 78% Mn.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	12.45
Ton lots, packed	14.05

Spiegeleisen

Contract prices gross ton; lump, f.o.b.

	16-19% Mn	19-21% Mn
	3% max. Si	3% max. Si
Palmerton, Pa.	\$84.00	\$85.00
Pgh. or Chicago	84.00	85.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	36.95
Ton lots	38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	30.00
Ton lots	32.00
Less ton lots	34.00 to 37.00

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	28.45	30.30	31.50
0.07% max. C	27.95	29.80	31.00
0.15% max. C	27.45	29.30	30.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained mn

	21.35¢
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Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	11.40
Ton lots	13.05
Briquet, contract basis carlots, bulk delivered, per lb of briquet	12.65
Ton lots, packed	14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$95.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00. Add \$1.05 per ton for each additional 0.50% Si up to and including 17%. Add \$1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	18.00
97% Si, 1% Fe	18.50

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk	6.95
Ton lots	8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.30
50% Si	12.40	85% Si	15.55
90-95% Si			17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	\$2.05	\$2.95	\$3.75
Less ton lots	2.40	3.30	4.55

Ferrovandium

35-55% contract basis, delivered, per pound, contained V.

Openhearth	\$3.00-\$3.10
Crucible	3.10-3.20
High speed steel (Primors)	3.20-3.25

Alstfer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carloads	9.90
Ton lots	11.30

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo

	\$1.15
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Ferrocolumbium, 50-60% 2 in. x D, contract basis, delivered per pound contained Cb.

Ton lots	\$4.90
Less ton lots	4.95

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta

	\$3.75
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Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo

	\$1.32
--	--------

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton

	\$65.00
10 tons to less carload	\$75.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti

	\$1.35
--	--------

Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti

	\$1.50
Less ton lots	1.55

Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton

	\$177.00
--	----------

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W5, ton lots, delivered

	\$5.00
--	--------

Molybde oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa.

	\$1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa.	\$1.13

Stmann, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk lump	14.50¢
Ton lots, bulk lump	15.75¢
Less ton lots, lump	16.25¢

Vanadium Pentoxide, 86 - 89% V₂O₅, contract basis, per pound contained V₂O₅

	\$1.28
--	--------

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

Ton lots	21.00¢
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Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.

Carload, bulk	7.00¢
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Boron Agents

Borostil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B.

	\$5.25
--	--------

Bortam, f.o.b. Niagara Falls

Ton lots, per pound	45¢
Less ton lots, per pound	50¢

Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots, per pound	10.00¢
---------------------	--------

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots.

F.o.b. Wash., Pa.; 100 lb up	
10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50

Grinnal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.

No. 1	\$1.00
No. 6	68¢
No. 79	50¢

Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd

Ton lots	\$1.46
Less ton lots	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered

Less ton lots	\$1.30
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Silenz, contract basis, delivered.

Ton lots	45.00¢
----------	--------

9.90
11.30

\$1.15

\$4.90
4.95

\$3.75

\$1.32

65.00
73.00

\$1.35

\$1.50
1.55

77.00

\$5.00

\$1.14

\$1.13

4.50¢
5.75¢
6.25¢

11.28

.00¢

.00¢

5.25

45¢
50¢

.00¢

1.20

.85
.20
.50

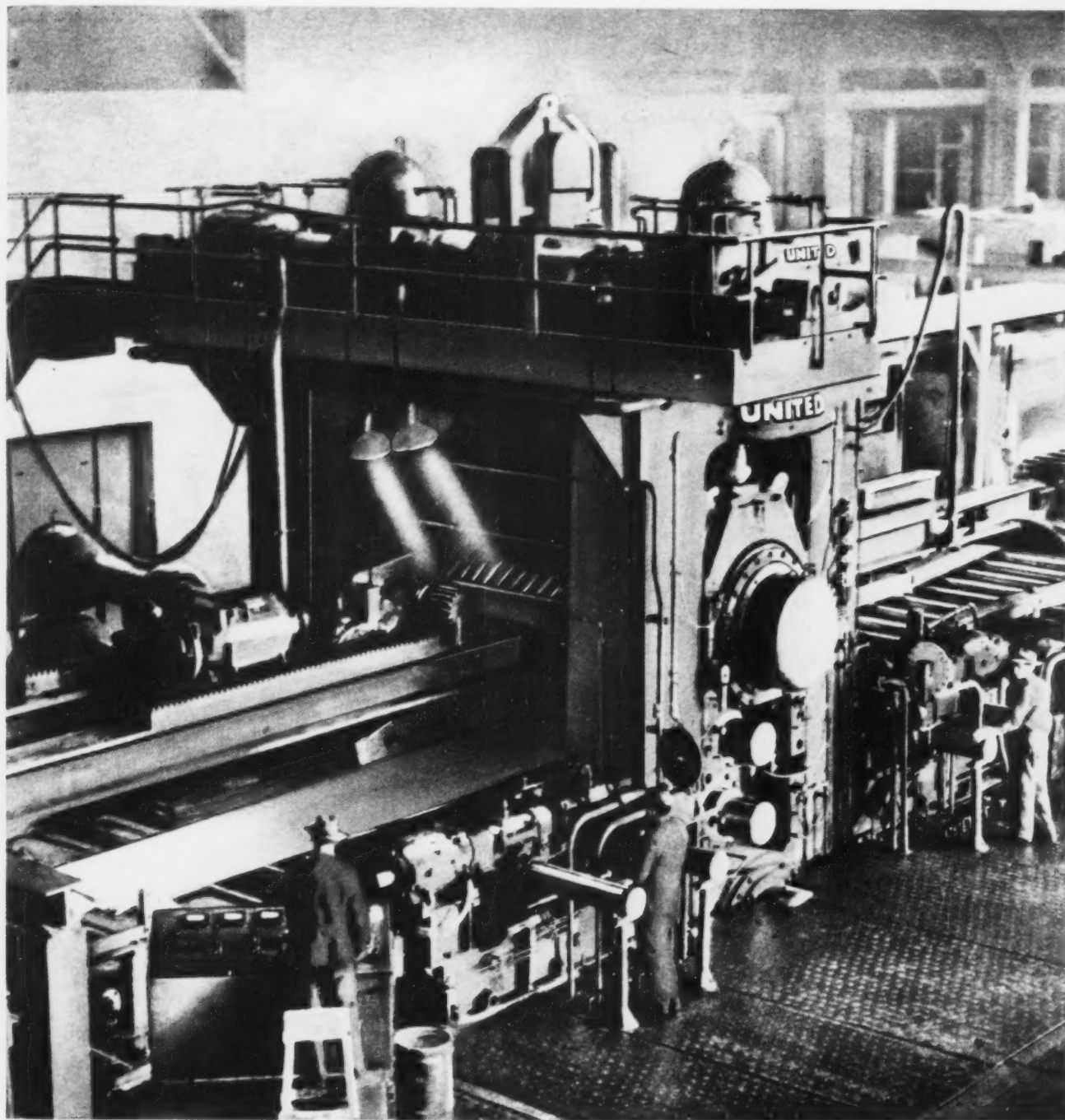
.00
68¢
50¢

.46
.57

.30

.00¢

52



4 High Aluminum Rolling Mill

Designed and Built by

UNITED ENGINEERING and FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Plants at PITTSBURGH • VANDERGRIFT • NEW CASTLE • YOUNGSTOWN • CANTON

Subsidiaries: Adamson United Company, Akron, Ohio

Laddell United Company, Wilmington, Delaware

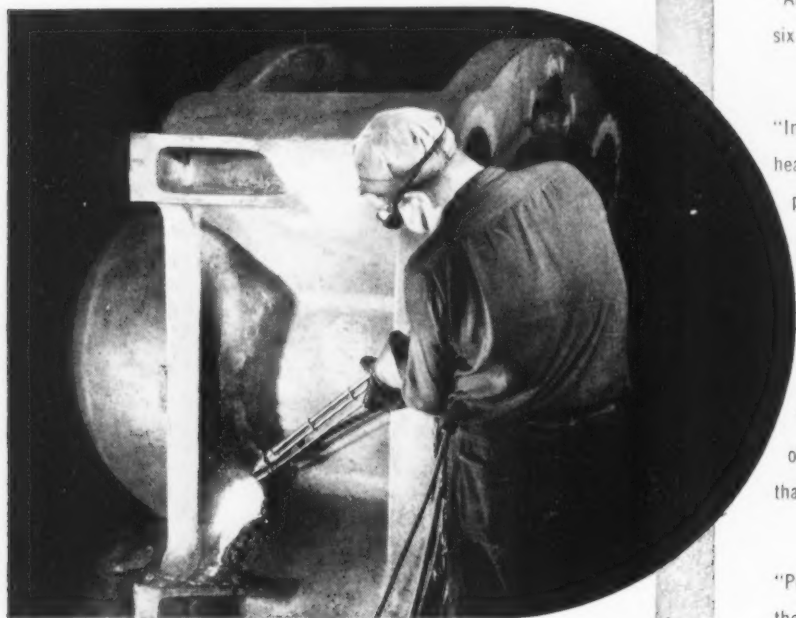
Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.



POWDER-WASHING SPEEDS CLEAN-UP

**Removes excess and defective metal
quickly, easily, and at low cost**



Cleaning-floor bottlenecks eliminated, production up, costs down, scraps and recasts negligible—that's the gist of enthusiastic reports on LINDE's powder-washing process.

Powder-washing combines the quiet speed of oxygen-cutting with a surface quality comparable to finish grinding. It removes fins, pads, sand inclusions, penetrations, burned core sand, chill bars, nails, chaplets, cracks and tears. It finishes flat or uneven surfaces to close tolerances with equal ease. And the powder-washing flame gets into places where other equipment can't.

Powder-washing can be applied to any carbon or alloy-steel casting. Equipment is simple. Technique is easily mastered in a short time.

For further details, telephone or write today, LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. In Canada: Dominion Oxygen Company, Limited, Toronto.

WHAT DO FOUNDRYMEN SAY ABOUT POWDER-WASHING?

"... powder-washing does for us in two hours what required one day of chipping."

*

"An hour of powder-washing has replaced four to six hours of grinding."

*

"Increased production and reduced labor and overhead more than make up for the cost of gases and powder consumed."

*

"... the equivalent of four days' chipping in one and one-half hours."

*

"... a casting which formerly required one hour of grinding is cleaned by powder-washing in less than five minutes."

*

"Powder-washing cleaned one casting in an hour, the other in 30 minutes. Conditioning by chipping and grinding would have taken three and two days respectively."

*

"... removed the shifted cores and penetrations with a saving of several hundred man hours."

*

"... in a few hours, cleaned up housings that otherwise would have had to be scrapped."

*

"... washed out a layer of sand from inside the cylinder in less than two hours, a job we could have done with no other available equipment."

LOOK TO

Linde
Trade-Mark

know-how . . . show-how . . . products and processes
FOR WELDING, CUTTING, TREATING, FORMING METALS

The term "Linde" is a registered trade-mark of Union Carbide and Carbon Corporation.



GEO. H. BULLARD COMPANY, INC.

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in the Industry*

HIGH SPEED GRINDING WHEELS

CUT-OFF AND COPING WHEELS

WESTBORO, MASSACHUSETTS

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ALL INDUSTRIAL USES

PERFORATIONS IN
HEAVY PLATES
ARCHITECTURAL GRILLES

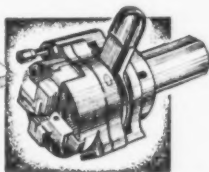
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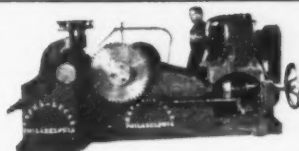
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Insert Chaser
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famous for accuracy and
straightness of threads, low chaser costs,
less downtime, more pieces per day.



THE EASTERN MACHINE SCREW CORP., 21-41 Barclay Street, New Haven, Conn.
Pacific Coast Representative: A. C. Berkringer, 234 N. San Pedro St., Los
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Machines for
Sawing All Kinds
of Metals*

THE ESPEN-LUCAS MACHINE WORKS
FRONT AND GIRARD AVE., PHILADELPHIA, PENNA.

GOSS and DE LEEUW

MULTIPLE SPINDLE

CHUCKING MACHINES

Four, Five, Six, Eight Spindles • Work and Tool Rotating Type

GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.



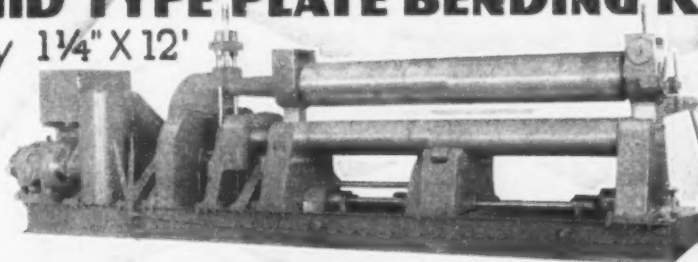
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are included in Our Improved Portable Scleroscope Model D-1. This efficient Single Scale tester registers Brinell-Shore values under otherwise inaccessible conditions. 100% portable for floor and field work, dead soft metals or superhard steel either of brittle or thin cross section, non-destructive, accurate, speedy, always ready and fool-proof.

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THE SHORE INSTRUMENT & MFG. CO., INC.
9025 Van Wyck Ave., Jamaica, N. Y.

PYRAMID TYPE PLATE BENDING ROLL

Capacity 1 1/4" X 12'



Our Line
Light and heavy
machinery for all
classes of sheet
metal, plate and
structural work.

BERTSCH & COMPANY, CAMBRIDGE CITY INDIANA

CONSIDER GOOD USED EQUIPMENT FIRST

BELT GRINDING UNIT

Hill Clutch & Machine & Fdy. Co. Open Side Abrasive Belt Grinding Unit. Designed to accommodate slabs up to 3/4" thick x 30" wide x 30' long.

BRAKE—LEAF TYPE

16' x 3/4" Drex & Krump Leaf Type Bending Brake, Motor Driven with 40 H.P. A.C. Motor.

BUILDING

72'6" x 140' Steel Building—NEW—Designed for Corrugated Steel Siding and to carry load of 30 ton overhead electric traveling crane.

CHARGING MACHINE

6000 lb. Brosius Floor Type Gasoline Driven Charging Machine. Equipped with Peel, Gasoline Engine, Rubber Tires.

CRANE

6 1/2 ton Shepard-Niles Overhead Electric Traveling Crane 80' Span, Motors 440/3/60. Equipped with 2 1/2 yd. Clamshell Bucket.

CRANE—GANTRY

5 ton Whiting Two Leg Gantry Crane 52 Ft. Span Cab Control. Three Motors 220 v. 3 ph. 60 cy.

FLANGING MACHINE

3/4" McCabe Pneumatic Flanging Machine, Pneumatic Holdowns, Circle Flanging Attachment.

FORGING MACHINE

5" Ajax Forging Machine or Upsetter, Motor driven. Equipped with Air Clutch.

FURNACES—Melting

400 lb. Moore Type "UT" Melting Furnace Top Charge. Complete with Transformer. New 1943—Little Used.

15 ton Herault Model V-12 Electric Melting Furnace Top Charge hydraulically operated. Complete with Transformer Equipment.

25 ton Moore Size "NT" Melting Furnace, with 7500 KVA Transformer 13,200 vo. 3 ph. 60 cy.

LEVELER—ROLLER

60" Aetna-Standard Roller Leveler, Motor Driven. 17 Rolls 4 1/2" Dia.

PLANERS

48" x 48" x 20' Cincinnati, Four Head

48" x 48" x 12' Niles-Bement-Pond, Four Head

60" x 60" x 12' Niles-Bement-Pond, Four Head

72" x 72" x 12' Niles-Bement-Pond, Four Head

PLATING MACHINE

Type "B" Crown Full Automatic, Nickel & Chrome Plating Machine, Max. Work Size

16" wide x 36" deep x 4" thick.

PRESS—BRIQUETTING

Model BL-350 Milwaukee Hydraulic Briquetting Press, Complete with Pumps. Capacity Grey

Iron Briquettes 3 1/2 tons per hr.

PRESS—KNUCKLE JOINT

1000 ton Bliss #27 Knuckle Joint, Embossing & Coining Press, 2 1/2" stroke, 18" Shut Height.

ROLLING MILLS

8" x 10" Schmitz Single Stand Two High With Friction Drive Rewinder.

12 1/2" x 16" Philadelphia Two High Cold Rolling Mill. Complete with Pinion Stand, 75 H.P. Motor 440/3/60. Starter and Controls, Incl. Collar.

18" x 24" Waterbury Farrel Two Stand Two High Rolling Mill. Complete with Elec. Equip.

18" x 60" Three High Roughing Mill, Complete with billet heating furnace and accessory

equipment including electrical equipment.

27" x 56" United Two High Skin Pass Mill

STRAIGHTENERS

No. 3 Medart 3-Roll Straightening Machine

Capacity 1" to 3 1/2" Bars or 4 1/2" O. D. Pipe

or Tubing. NEW 1950.

No. 1B Sutton Round Straightener, Motor Drive.

Capacity 3/16" to 3/4" O.D. Friction Drive

complete with 1/3 H.P. A.C. Motor.

TESTING MACHINE

20 000 lb. Southwark-Emery Universal Hydraulic

Testing Machine.

300 000 lb. SOUTHWARK-EMERY Universal Hy-

draulic Testing Machine.

TRIMMING LINE

#1049 Torrington Trimming Line. With Feed

Rolls and Scrap Cutter. Capacity for steel

or aluminum alloys 1/8" max. Trimmed width

22" min. 66" max. Scrap Length 3/4" min.

2 1/4" max.

UNIVERSAL IRONWORKERS

Ryerson Steel Frame Universal Iron Worker.

M.D. Capacity Punch 3/8" thru 3/4". Shear 1"

Square 1 1/4" Round, 1/2" x 4" Flat, 4 x 4 x

1/4" Angles.

No. 28U-30 Buffalo Armor Plate Universal Iron-

worker—Combination Punch Shear & Bar

Cutter. Motor Driven Capacities—Shear 3"

Round, 2 1/4" Square, 5x1 1/4" Flat, 5x5x3/8"

Angles 12"—31 1/2" Beams, etc., Punch 1 1/2"

thru 1 1/4".

RITTERBUSH & COMPANY, INC.

50 Church Street, New York 8, N. Y.

Phone—Cort 7-3437

The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

There's no "muddle through" attitude connected with the F. J. Edwards Ltd. Machine Center which opened in London a few weeks ago. Physically, it's one of the largest machinery sales depots in Europe and the stress is on streamlined efficiency.

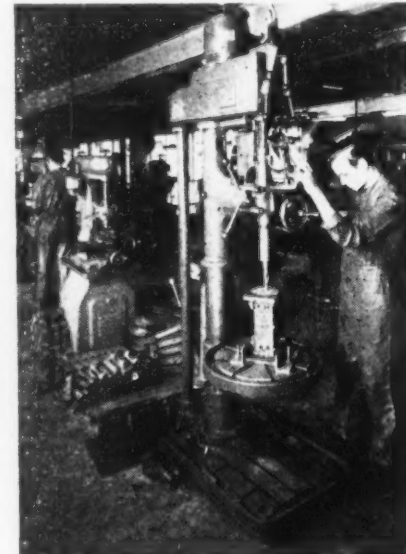
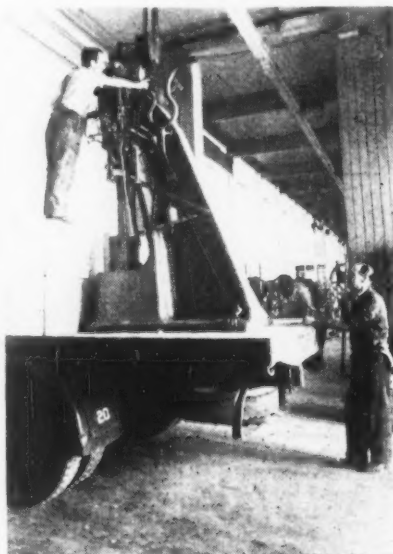
The building, which houses several thousand F.J.E. new and used machines, covers 150,000 sq ft. Large equipment such as heavy sheet metalworking machines, machine tools, 100-ton presses and other industrial equipment is displayed on the 2-acre ground floor as is the sizable reconditioning shop. Lighter machinery is located on second-story galleries which

run the length of the building and overlook the main floor.

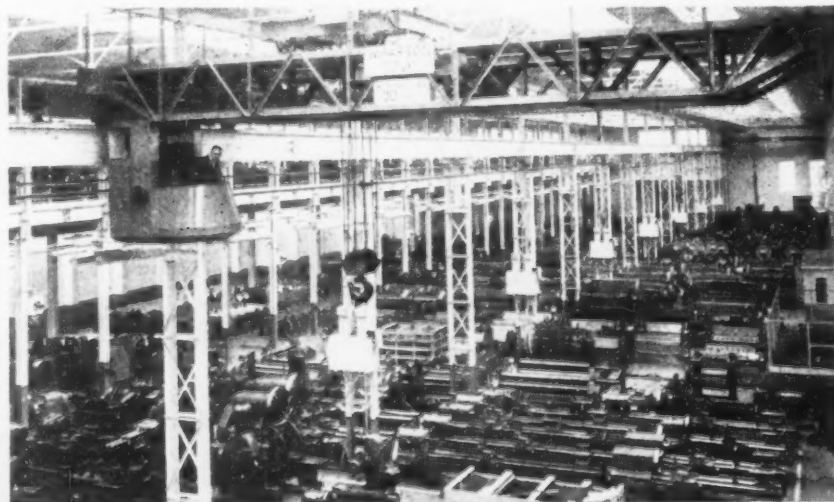
Positioning of heavy machinery is handled by two 20-ton electric overhead cranes. Five-ton units are used to move equipment on the galleries and in other parts of the plant.

Loading and unloading has been simplified, as trucks can drive right into the plant to receive or disburse their loads directly.

Staff at the Machine Center includes technical men who advise customers, an engineering drafting section, machine inspectors, demonstrators and assembly crews. There is also an apprentice section to train new workers.



ENGLISH PLANT: Picture top left shows a used machine being loaded after it has come from the reconditioning plant. Picture top right shows one of the operations in the machine shop. Bottom picture shows a 20-ton crane maneuvering.



THE CLEARING HOUSE

CONSIDER GOOD USED EQUIPMENT FIRST

AIR COMPRESSORS

14" x 12" Pennsylvania Air Compressor, 100# Pressure, Complete with 75 H.P. Syn. Motor
18" x 11" x 14" Sullivan WJ-3 Air Compressor 895 CFM, Driven by 150 H.P. Westinghouse Syn. Motor 140 x 60

BAR TURNING MACHINE

Medart HF-2 Bar Turning Machine, Capacity 1" to 2 1/2" Complete with Accessories

BENDING ROLLS

30" x 1" Ryerson Pyramid Type Bending Roll
30" x 1" Southwark Pyramid Type Bending Roll
30" x 1" Southwark Pyramid Type, Motor Driven

BRACKS—LEAF TYPE

8" x 1/2" Drels & Krump Leaf Type Bending Brake Motor Driven with 3 H.P. A.C. Motor
12" x 3/16" Chicago #226 Steel Apron Brake, M.D.
12" x 1/2" Drels & Krump Leaf Type Bending Brake, Motor Dr. with 40 H.P. A.C. Motor

BUILDING

72'0" x 140' Steel Building—NEW—Designed for Corrugated Steel Siding—and to carry load of 90 ton Overhead Electric Traveling Crane

BULLDOZER

#9 Williams White Bulldozer, Motor Dr. with 50 H.P. Motor, 440 volt, 3 phase, 80 cycle, Face of Crosshead 26" 80" Movement of Crosshead 24"

CHARGING MACHINE

6000 lb. Brosius Floor Type Gasoline Driven Charging Machine, Equipped with Peel, Bada Gasoline Engine, Rubber Tires

CRANES—GANTRY

5 ton Walling Two Log Gantry Crane 52' Span Cab Control Motors 220 x 3 ph 60 cy
15 ton PAH Two Log Gantry Crane 45' Span with 12' Overhang—max 10' other end 3 ton Auxiliary, Two Trussers and 3 Motors, 440 volt 3 phase 40-volt

CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton Robbins Myers	24" Span 220 V 60
6 1/2 ton Rhoads-Niles	20' Span 440 V 60 AC
With 3 1/2 yd Clamshell Bucket	
16 ton Shaw	87' Span 220 Volt D.C.
18 ton P. & H.	40' Span 440 V 60 AC
18 ton Erie	40' Span 440 V 60 AC
18 ton Niles	60' Span 220 Volt D.C.
18 ton Toledo	44' Span 220 V 60
30 ton Bedford	58' Span 220 V 60 AC
30 ton Morgan	88' Span 220 Volt DO
With 5 ton Auxiliary	

DIEING MACHINES

75 ton Henry & Wright High Speed Dieing Machine Double Roll Feed, Recan Cutter 3" Stroke
100 ton Henry & Wright Dieing Machine, 4" Stroke, 19" Shut Height, Complete Elec. Equip.

DIE CASTING MACHINES

Model RA 12 KIX Die Casting Machine, Air operated Plunger Gonsenck Type for zinc, lead and tin die space between bars 1 1/4" x 1 1/4", Die Operates 6" NEW 1949 never used
Pratt & Whitney Type RI-2416 Single Spindle 3-Dimensional Keller Machine, with complete electrical equipment and accessories

DRAW BENCH

50,000 lb. Draw Bench, Motor Driven with 50 H.P. Motor, Maximum Draw 40 ft.

FLANGING MACHINE

4" McAlpine Pneumatic Flanging Machine, Pneumatic Hydraulic, Circle Flanging Attachment

FORGING MACHINES

1 1/2" 3" 4" 5" Ajax
1" 3" 5" Arms
4 Ajax Air Clutch

FURNACE—ANNEALING

Furnace Ener Co. Roll Type Annealing Furnace Gas Fired, Operating Space 40"x40" Round, 500 CFM Capacity

FURNACE—HEATING

60 KW Leeds & Northrup Home Furnace #9478-17B-24 With controls Work space 28" dia. x 28" deep

FURNACES—MELTING

400 lb. Moore Type "T" Melting Furnace, Top Charge, Complete with Transformer, New 1948—Little Used
18 ton Hamult Model V-19 Ton Charge Hydraulically Operated, Complete with Transformer Equip.

GEAR REDUCERS

500 H.P. United Combination Reduction Gear & Pinion Stand Gear Ratio 8.58:1
900 H.P. Farrel Birmingham, Size 18 Reduction Gear, Ratio 720 to 244 RPM
700 H.P. Falk Single Reduction Gear, Ratio 875 to 100 RPM
1000 H.P. Mosta Gear Reduction Unit, Ratio 19:1

GRINDER

No. 4 Cincinnati Centerless Grinder, Motor Driven, Capacity standard work rest 2" to 4" dia., optional work rest 1/2" to 3" Apical fixtures will allow work to be handled up to 9" dia.

GRINDER—CYLINDRICAL

14 x 36" Norton Type C, complete with Elec. Equip.

HAMMERS—BOARD DROP

1200, 1600, 1000 lb. Model J2 Chambersburg
1000 lb. Billings & Spencer

HAMMERS—STEAM DROP

1500, 4000 lb. Erie

HAMMERS—STEAM FORGING

1200 lb. Maximilian Single Frame
1500, 1600, 2000, 3000, 4000 lb. Chambersburg
600, 1500, 2500 lb. N.B.P.
600, 1140, 1500, 2000, 2500, 3500, 4000 Erie
20,000 lb. Massey Steam Forging Hammer

HAMMERS—MISCELLANEOUS

No. 4N Naxel Hammer, Geared Motor Drive
300 lb. Bradley Compact Hammer, Arr. for Motor Drive with 10 H.P. A.C. Motor

3000 lb. Chambersburg Pneumatic Hammer Complete with Elec. Equip. New 1951
18"x12" Chambersburg Comestamp Hammer, 18" stroke

LATHE—TURRET

Model 21 Gisholt Geared Head Turret Lathe, Spindle Bore 4-1/16", Elec. Equipment and numerous accessories incl. NEW 1951

LEVELER—ROLLER

60" Aema Standard 17-Roll Leveler, 4 1/2", Dia. Rolls Arr. Motor Drive

MOTORS

1250 H.P. Westinghouse Induction Motor 6600 volt 3 phase 60 cycle 393 R.P.M.
2000 H.P. General Elec. Induction Motor 6600 volt 3 phase 60 cycle 600 R.P.M.
3500 H.P. General Elec. Direct Current Motor 6600 volt 175/350 H.P.M.

MOTOR GENERATOR SET

740 H.P. General Electric Syn. Motor 440 volt A.C. with two generators 750 KVA 230 volt D.C., Complete with Panel Board, etc.

NAIL MAKING MACHINES

No. 1 1/2 National—Size 10D, 12D, 16D, 30D, 30D
No. 2 National—Size 6D
No. 3 Glaser—Size 6D, 7D, 8D, 9D
Angell—Size 10D, 12D, 16D, roofing

PLANER—PLATE EDGE

30" x 1 1/2" Southwark Plate Edge Planer, Motor Driven, Equipped with 16 Pneumatic Jacks

PRESESSES—EXTRUSION

700 ton Horizontal Extrusion Press, 3-Column Type Ram 26" Diameter, Container suitable for billets 5" x 20"
1200 ton Horizontal Extrusion Press, 3 Column Type Ram 34" Diameter, Suitable for billets 6" dia. x 22" long

WE OFFER A COMPLETE LIQUIDATION SERVICE ON ANY BASIS WHICH CIRCUMSTANCES INDICATE WOULD BE MOST BENEFICIAL, WHETHER BY AUCTION, PRIVATE LIQUIDATION OR OUTRIGHT SALE

CONSULTANTS IN MANUFACTURING PROBLEMS FOR OVER A QUARTER OF A CENTURY

THERE IS NO SUBSTITUTE FOR EXPERIENCE
CONTACT US IN CONFIDENCE
WITHOUT COST OR OBLIGATION

PRESESSES—HYDRAULIC

Model RL-30 Milwaukee Hydraulic Briquetting Press Complete with Pumps, Capacity Grey Iron Briquettes 3 1/2 tons per hr.
75 ton Williams White Straightening Press, 27" Stroke, Red 8" x 16" 1/4" Dia. Ram
300 ton Bliss Hydrodynamic 48" Stroke Bed Area 24" x 24" Hyd. Pump Incl.
500 ton Southwark Hydraulic 24" Stroke, 78" Day-Light Platen 44" R to L x 32" F to B
500 ton Southwark Open Throat Hydraulic Press 12" Stroke Platen 58" x 58"
700 ton Klines Forming Press, 27" Stroke, 30" Dia. Ram, Platen 40" x 88" with overhang 40" x 120", Complete with Pump and Motor

PRESS—HYDRAULIC WHEEL

100 ton Klines Inclined Hydr. Wheel Press 73" Between Parallel Bars, Complete with Pump & Motor

PRESS—KNUCKLE JOINT

27 Bliss Knuckle Joint Embossing & Coining Press 1000 ton Capacity, 2 1/2" Stroke, 18" Shut Height

PRESESSES—STRAIGHT SIDE

No. 87A Bliss 250 Ton Capacity, Double Geared 32" Stroke, 30" x 33" Bed Area, Air Cushion
No. 305 Bliss 9" Stroke 14" Shut Height Equipped with Marquette Air Cushion
No. 59 Toledo Double Geared Tie Rod Press 255 ton Friction Clutch 18" Stroke 36 1/2" x 35" Bed Area
No. 3 Ferracite Super Speed Punch Press 30 ton Capacity, NEW 1948—never used
No. 675B Bliss Single Geared 1 1/2" Stroke, Double Roll Feed & Chopper, 10 H.P. A.C. Motor
No. 620 Bliss High Production Press, 1 1/2" Stroke 81-40 Verson 200 ton Press, 30" Stroke Bed Area 40" x 44"
No. 12 Zah & Hahnemann Patent Percussion Press 150 ton 12" Stroke, 17" x 17" Bed Area
No. 10-E Bliss 800 Ton, 10" Stroke Bed Area 60" x 126"
No. 7 Bliss 400 Ton 8" Stroke Bed Area 48" x 108"
No. 1037-5/8 Hamilton 300 Ton 16" Stroke Bed Area 48" x 104"
No. 93 1/2 Toledo 175 Ton, 6" Stroke Bed Area 40" x 72"
No. 606 1/2 Hamilton 185 Ton, 12" Stroke Bed Area 34" x 60"
No. 93 1/2 Toledo 150 Ton, 8" Stroke Bed Area 34" x 54"

PRESESSES—TRIMMING

Bliss S.S. Trimming Press with Side Shear, 250 Ton Capacity, 8" Stroke 52" x 30" Bed Area
No. 3 Erie Flywheel Drive Trimming Press, 3 1/2" Stroke 13" Between Guides
No. 18 Erie Trimming Press, 100-150 Ton

PUNCH—BEAM

Long & Allister Double End Beam Punch, Capacity Beam Punch End—Punch Ranges and web 24" I-beam and smaller

PUNCH & SHEAR COMBINATIONS

Ryerson Steel Frame Universal Ironworker, M.D. Capacity Punch 1" thru 1/2" Shear 1" Square, 1 1/2" Round, 1/2" x 1 1/2" Plate 1 x 1/2" Angle
No. 28 U-30 Buffalo Armor Plate Universal Ironworker, Capacity Punch 1 1/2" thru 1 1/2" Shear 3" Round 3 1/2" Square, 5 x 1 1/2" Plate, 5 x 3 1/2" Angle
Style EF Cleveland Single End Punch & Shear, M.D. Capacity Punch 1" thru 1 1/2"

RIVETER

135 ton Hanna Bull Riveter, Air Driven, 24" Gap, 78" Reach, Capacity 1" rivets cold and 1 1/2" rivets hot

ROLL—PLATE STRAIGHTENING

7 Roll Bertach Plate Straightening Machine, Capacity 10" x 1/2", Complete Elec. Equip.

ROLLING MILLS

7 1/2" Steckel Four High Rolling Mill, Max. Steel Width 6" Work Rolls 3 1/2" x 7 1/2", Complete with electrical equipment
8"x10" Rehnitz Single Stand Two High
12"x18" Single Stand Two High, Comp. with Elec. Equip.
12"x24" Waterbury Farrel Two High
15"x30" Mossberg Single Stand Two High
18"x24" Waterbury Farrel Two Stand Two High
20"x30" Two Stand Two High Rolling Mill
30"x30" Pools Two Stand Two High
22"x40" Single Stand Two High
27"x50" United Two High Skin-pass Mill
38"x60" Single Stand Two High
18"x60" Three High Roughing Mill, Complete with billet heating furnace and accessory equipment incl. elec. equip.

ROLL—TAPER FORGING

No. 68 Williams White Taper Forging Roll, Rolls 24" Dia., Shaft 8" Dia.

SAWS

No. 3 Ryerson Friction Saw, 54" Blade Hydraulic Feed, Complete with Elec. Equip.
52" Ryerson Friction Saw, 45 H.P. Motor Capacity Approx. 9" Round, 20" I-beam, 12" H-beam

SHEAR—ALLIGATOR

No. 7 Thomas Carlin Alligator Shear, 16" Blade, 30 H.P., D.C. Motor

SHEARS—ANGLE

Hilles & Jones No. 3 Double Angle Shear, M.D. Capacity 6" x 6" x 1/2"
Long & Allister Double Angle Shear, Model B, Capacity 5x6x1/2", Complete with Elec. Equip.

SHEAR—BAR

No. LH Lewis Open End Bar Shear, Motor Drive Capacity 1 1/2" Round

SHEAR—GATE

10"x1" Cincinnati Model 10016 Gate Shear, New 1948—Little Used

SHEARS—ROTARY

No. 60 Quickwork Rotary Shear, 1/2" Capacity
No. 100 Kiling Rotary Shear, 1" Capacity
No. 30 Quickwork Rotary Shear, 5/16" Capacity
Quickwork Heavy Duty Circle Shear, 1/2" Capacity, Complete with Circle Cutting Attachment

SHEARS—SQUARING

12"x18" Rance Steel Squaring Shear, Motor Dr. 8" x 1/2" Draft Model THZ 4/2500
8" x 1/2" Cincinnati Series 1408, Motor Driven
8" x 1/2" Long & Allister, Belted Motor Drive
SLITTERS
21" Yoder Sheet Slitter No. 530, Capacity 3 cuts .104" to 8 Cuts .154", Motor Dr.
72" Yoder Gang Slitter, Capacity 5 Cuts 30 Ga.

STRAIGHTENERS

No. 3 Medart 3-Roll Straightening Machine Capacity 1" to 3 1/2" bars or 4 1/2" O.D. Pipe or Tubing, NEW 1950
No. 1 1/2 B Sutton Round Straightener, Motor Dr. Capacity Tubing 5/16" to 3 1/2"—modified to handle up to 3 1/2" O.D. tubing
No. 1B Sutton Round Straightener, Motor Drive Capacity 3/16" to 1 1/2" O.D. Friction Drive complete with 1 1/2 H.P. A.C. Motor
Halden 8-Roll Strip Straightener & Cutting Machine, Capacity 14" wide 11 Ga. Sheet Steel

STRETCHER

McKay Hydraulic Bar Stretcher, Capacity up to 1 1/2" dia. In lengths 12' to 27'

SWAGING MACHINES

No. E4 Lanseller, Capacity 1 1/2" Tubing
No. 408 Ema Swager, Capacity 4" Tubing

TESTING MACHINES

200,000# Southwark Emery Universal Hydraulic
20,000 lb. Southwark Emery Universal Hydraulic

TRIMMING LINE

21040 Torrington Trimming Line, With Feed Rolls and Scrap Cutter, Capacity for steel or aluminum alloys 1/4" max. Trimmed width 22" min. 60" max., Scrap Length 1/2" min., 3 1/2" max.

WELDERS

250 KVA Progressive Model A-6 Flash Welder 40 volt 60 cycle, Mechanical Contactor HI-Pressure Clamp Assembly—NEW 1919
McKay Tube or Pipe Welding Unit, Capacity 4 1/2" to 7 1/2" O.D. Complete with all accessory equipment and motors

WIRE DRAWING MACHINE

No. 8 Waterbury Farrel 7-Die Wire Drawing Machine, Capacity 1/4" rod to #10 copper

Confidential Certified Appraisals
Liquidations — bona fide Auction Sales Arranged

October 23, 1952

• Manufacturing
RITTERBUSH & COMPANY, INC.
50 CHURCH ST., NEW YORK CITY 8

Telephone Cortlandt 7-3437

Equipment •

Consulting Engineering Service
Surplus Mfg. Equipment Inventories Purchased

THE CLEARING HOUSE

RE-NU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT

Qu.	H.P.	Make	Type	Volts	RPM
1	1500	G.E.	MCF	600	400/500
1	1750	Whe.		600	550/700
1	1500	Whe.		525	600
1	940	Whe.	QM	350	140/170
1	880	Al. Ch.		350	400/800
1	550	Whe.	CC-218	880	800/900
1	450	Whe.		850	415
1	400	G.E.	MCF	850	800/1030
1	850	Cr. Wh.	CCM-151H	230	1180
1	335	Whe.	MQ	250	300/900
1	300/300	G.E.	MPC	230	300/920
1	200	Bel.	197OT	230	720
1	150	G.E.		400	250/750
1	150	Cr. Wh.	65H	230	1150
10	150	Cr. Wh.	88H-TEFC	230	960
1	150	Whe.	8K151H	230	900/1800
1	150	Whe.	8K-201	230	860/950
1	50/120	G.E.	MCF	230	250/1900
1	100	Whe.	SK-181	230	450/1000
1	100	G.E.	CD-175	230	385/750
1	100	G.E.	CDP-115	230	1750

MILL & CRANE

1	50	G.E.	CO-1810	230	735
1	33	Whe.	K-3	230	585
1	30	G.E.	MD-104 1/2 AA	550	700
1	30	Whe.	K-5	230	975
1	18	Whe.	K-5	230	430
1	10	C.W.	SCM-AH	230	1150
1	10	G.E.	MD-104	230	600/800
1	8.35	Whe.	K-3	230	680
1	8	C.W.	SCM-FF	230	1750
1	3	Whe.	HK-2	230	435
1	3 1/4	Whe.	K-1	230	835

A.C. MOTORS

3 phase—60 cycle

SLIP RING

Qu.	Hp.	Make	Type	Volts	Speed
1	1800	G.E.	MT-408	2300	880
1	1800	ABB	MP	2300	720
1	1300	G.E.	MP	3300	375
1	500	Whe.	CW	550	250
1	500	G.E.	IM	440	940
2	500	G.E.	M-574-Y	6000	900
1	500	G.E.	IP	550	505
1	400	Whe.	CW	440	614
1	350	G.E.	MT-442Y	2300/4000	258
1	300	Al. Ch.		440	505
1	250	G.E.	MT-424-Y	4000	357
1	250	G.E.	MT-555A	3300	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	160B	440	500
1	200	G.E.	IM17	440	985
3	200	G.E.	IM-17	440	940
1	200	G.E.	IM	440	485
1	200	G.E.	MT	440	1170
1	150 (unused)	Whe.	CW	2300	435
1	125	Al. Ch.		440	720
4	125	G.E.	MT-506Y	440/2200	485
2	100	G.E.	IM	440	600
5	100	A.C.	ANY	440	695
1	100	G.E.	IM-16	3200	425
1	100	Whe.	CW-555A	440	760

SQUIRREL CAGE

2	600	G.E.	FT-559BY	440	3570
2	450	Whe.	CR-1420	2200/4150	354
1	300	Al. Ch.		2300	385
1	300	G.E.	IK-17	440	580
1	200	G.E.	IK	440	805
2	300	G.E.	KT-557	440	1800
1	150	Whe.	CR-950H	440	800
1	150	Whe.	CM	440	580
8	125/75	G.E.	IK	440	900/450
1	125	Al. Ch.	ARW	2200	1750
1	125	G.E.	KP-838-Z	440/2200	8525
1	125	Whe.	Vic	440	485

SYNCHRONOUS

2	8500	G.E.	TS	2300	257
2	2100	G.E.	ATI	2300	890
3	1750	G.E.	ATI	2300	8000
2	2800	Whe.		2300	130
3	735	G.E.	ATI	3300/12000	660
1	450	Whe.		2300	450
2	350	G.E.	TS	2300	150

M-G Sets—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	2000	G.E.	500	600	11000
1	2000	G.E.	514	600	6000/13200
3	1500	G.E.	514	250	6000/13200
1	1500	G.E.	720	600	6000/13200
1	1500	G.E.	380	275	4400
1	1500	Whe.	600	600	4160
3	1000	Whe.	900	260	4400
1	1000	G.E.	900	350	2300
1	1000 (BT)	G.E.	900	375	4160
1	500	Whe.	900	135	2300
1	500	G.E.	720	125/250	440
1	500	Whe.	900	250	6000/13200
1	500	Whe.	1200	125/250	2300
1	400	Whe.	1200	250	2300
1	400 (BT)	Cr. Wh.	1200	125/250	2300
1	350	G.E.	900	125	3300/4160
1	300	Al. Ch.	1200	125/250	3500
1	150	Whe.	1200	275	2300
1	140 (BT)	Cr. Wh.	600	125/250	440/2300
1	100	Delco	1200	130/240	2300
1	100	G.E.	1170	125	220/440

FREQUENCY CHANGER SETS

Qu.	KW	Make	Freq.	Voltages
1	3000	G.E.	25.40	2300/2300/4000
2	2500	G.E.	25.42.5	2300/2300
1	1000	G.E.	25.58.3	4400/2300
1	500	Al. Ch.	25.60	11000/2300

BELYEA COMPANY, INC.
87 Howell Street, Jersey City 6, N. J.

MILES' QUALITY

AIR COMPRESSOR, 21"x13"x16" Worthington two stage
AUTOMATIC, 20"x25" Fay (1942)
AUTOMATIC, 8" Bullard Mult-Au-Matic, 6-spindle
AUTOMATIC, 6-spindle Baird chucker
BORING MILL, 4" Detrick & Harvey, horizontal, floor type
BORING MILL, 3" Universal tri-way, duplicator
BROACH, No. 1 Foote Burt duplex surface
BROACH, 2-ton American horizontal hydraulic
BROACH, No. 3XA Oilgear horizontal hydraulic
BROACH, V42 American hydraulic, 18 ton
BULLDOZER, No. 22 Williams & White
DRILL, No. 310 Baker, heavy duty
DRILL, 24" Cincinnati upright
DRILL, 24" No. 25 Foote Burt
DRILL, 12-spindle No. 12 Natco
DRILL, 12-spindle No. 10 Defiance rail type
DRILL, 36-spindle Bausch, adjustable spindle
DRILL, RADIAL, 3 1/2", 8" American sensitive
GEAR HOBBER, No. 12H G&E
GEAR HOBBER, No. 130 Cleveland Rigidhobber
GEAR HOBBER, No. 3 Adams Farwell
GEAR HOBBERS, Two No. 12 Barber-Colman
GEAR HOBBERS, Nos. 1 and 25 5A Lees Bradner
GEAR SHAVER, 8"-12" Red Ring
GRINDERS CENTERLESS, Two No. 2 Cincinnati, with pressure lubrication
GRINDER, 6"x30" Cincinnati, type ER, infeed
GRINDERS, CYLINDRICAL, 10x18 Norton with hydraulic quick infeed
GRINDER, CYLINDRICAL, 12"x36" Bath universal
GRINDERS, INTERNAL, Nos. 16-28 and 24-36 Bryant
GRINDERS, INTERNAL, Nos. 72A3 and 72A5 Head
GRINDERS, SURFACE, 12" and 16" No. 22 Healds
GRINDER, SURFACE, No. 78 Wilmarth & Morman
HAMMER, Nos. 5N & 6B Hazel pneumatic
HAMMER, 40 lb. Bradley helve
HONE, Nos. 172 & 2510 Barnes hydraulic
LATHE, ENGINE, 24"x14" American
LATHE, ENGINE, 30"x16" LeBlond
LATHE, TURRET, No. 5 Acme universal
LATHE, TURRET, No. 5 Gisholt universal, 1943
LATHE, TURRET, No. 6 W&S, G. H. motor-in-base
MILLERS, Two No. 2 Cincinnati plain
MILLERS, Nos. 1, 2 and 3 Kent Owens hand
MILLER, 18" Cincinnati automatic
MILLER, 24" Cincinnati automatic duplex
MILLER, type 45 Product-O-Matic
MILLER, 30 1/2" x 21" x 12" Ingersoll 4-spindle planer type
MILLER, 48" x 20" x 20" Ingersoll planer type, 3 vertical heads
MILLER, 48" x 36" x 12" Ingersoll planer type adj. rail
MILLER, 84" Ingersoll 6-spindle rotary continuous
MILLER, PLAIN, No. 3B Milwaukee
MILLER, THREAD, Type C Hall planetary
MILLER, THREAD, Nos. 4, 6 and CT 36 Lees Bradner
PLANER, 36"x36"x8" Cleveland open-side
PLANER, 36"x36"x12" Niles Bement Pond
PRESSES, Nos. P01, P1, P2, P3, PA4, P5 and CA4 Ferracute
PRESS, No. 61 Cleveland OBI
PRESSES, Nos. 56 1/2, 57 1/2 and 77 1/2 Bliss s.s. trimming
PRESS, No. 245 1/2 Hamilton s.s. tierod frame
PRESS, No. EG54 Ferracute knuckle joint
PRESS, 600 ton No. 570 Toledo forging
PRESS, No. DA8411 Hamilton double action toggle draw
PRESS, 100 ton HPM hydraulic
RIVETERS, large variety
SLOTTER, 16" Bement Miles crank
SAWS, Three 816S Kalamazoo metal cutting band, new
SAW, 7" No. 14 Higley cold-cutting
SAWS, three L-W (Toledo) power hack, new
SHAPER, 32" Ohio Dreadnaught
SHAPER, 27" Morton draw cut
SHEAR, 38" throat No. 17F New Duty
STRAIGHTENER, No. 0 Sutton for bars
TAPPERS, Two No. 71 Eltco
TAPPER, 19" Hammond sensitive drilling & tapping
TESTER, 230,000 inch-pound Timius-Olsen No. 2 torsion
TESTER, 100,000 lb. Riehle tensile & compression
THREADERS, 2" Landis pipe threading and cutting
THREADERS, 2" 3 1/2" Landis, double spindle
THREADERS, 2" Oster rotary head
UPSETTER, 3" National air clutch
UPSETTERS, Two 4" Ajax heavy duty, twin-gear
WELDER, 100 KVA Thompson automatic spot
WELDERS, 12" and 14", 12 KVA American Electric Fusion Co. spot.

WRITE FOR CATALOG NO. 193 FOR COMPLETE LISTING

MILES MACHINERY CO.
2025 E. Genesee Ave.
SAGINAW, MICHIGAN

GUARANTEED TOOLS

60"x20" NILES-BEMENT-POND Geared Head Engine Lathe, rapid traverse

27"x12" MONARCH Geared Head Engine Lathe, taper attachment, AC-MD

24" x 72" centers BOYE & EMMES Heavy Duty Geared Head Engine Lathe, chuck, AC-MD.

No. 3L GISHOLT Universal Saddle Type Turret Lathe, bar feed, chucks, collets, tooling, hardened ways, rapid traverse, new 1943. Perfect Condition. Immediate Delivery.

No. 28 FOSTER Geared Head Turret Lathe, rapid traverse, AC motors

42" BULLARD New Era Type Vertical Turret Lathe, AC-MD

36" BULLARD Vertical Turret Lathe converted to Spiral Drive, AC-MD

1 1/2" LANDIS Double Head Bolt Threader, with leadscrews, MD

No. 1 DOUGLAS Plain Horizontal Mill, table 8"x32", power feeds, motor in base, No. 40 taper, new 1942.

No. 2 VAN NORMAN Plain Horizontal Mill, power rapid traverse, No. 50 taper, new 1942

No. 3-24 CINCINNATI Plain Hydromatic Mill

5-13" column CARLTON Radial Drill AC motor on arm, 15 to 1500 RPM

4" AMERICAN High Speed Sensitive Radial Drill 9" column, AC motor on arm

3 Spindle FOSDICK Drill Press, individual AC motors for each spindle, 1942

No. 6 TOLEDO O.B.I. Press, 56 Tons

10"x24" NORTON Hydraulic Surface Grinder, 1942

25A HEALD Rotary Surface Grinder, 24" diameter, magnetic chuck

36" OHIO Dreadnaught Shaper, AC-MD

75 Ton HENRY & WRIGHT Double Crank Dieing Machine, roll feed & Scrap cutter

No. 22 MURCHEY Threader

No. 136 CLEVELAND Rigidhobbers

O'CONNELL MACHINERY CO.
Tel: BAiley 5800
1693 GENESEE ST. BUFFALO 11, N.Y.

Immediately Available ROLL FORMING MACHINES

Kane & Roach 15 stand, 30" wide, 4 1/2" dia. shaft 75 H.P. M.D.
Yoder 14" stand, 24" wide, 2 1/2" dia. shaft, 25 H.P. M.D.

Tishkin M-2 Ten stand Yoder with AC-2 Cutoff Rafter Tube Forming Machines, 5 & 7 stand
Yoder 5 stand vertical, with AC-1 Cutoff

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THE CLEARING HOUSE

FOR SALE

STAINLESS STEEL

COMPLETE STOCK OF STAINLESS STEEL BARS — SHEETS — PLATES

SAME DAY SHIPMENT FROM STOCK - ONE POUND OR A CARLOAD

We Specialize in Stainless Steel Only - Additional Items Arriving Daily

STAINLESS SHEETS				STAINLESS ROUND BARS				STAINLESS PLATES				STAINLESS PLATES			
GAUGE	SIZE	PCS.	TYPE	TYPE 303				GAUGE	SIZE	PCS.	TYPE	GAUGE	SIZE	PCS.	TYPE
18 ga.	36" x 120"	19	304	DIAMETER	WEIGHT	1/8"	36" x 80"	2	321	1/4"	91" x 87"	1	304		
18 ga.	38" x 96"	2	316	3/16"	500 lbs.	1/8"	36" x 108"	1	321	1/4"	96" x 258"	1	304		
16 ga.	36" x 120"	40	304	5/16"	620 lbs.	1/8"	36" x 117"	1	321	1/4"	94" x 260"	1	304		
16 ga.	19" x 120"	4	316	1/2"	500 lbs.	3/16"	26" x 135"	1	321	5/16"	19" x 88"	1	304		
16 ga.	42" x 104"	1	316	5/8"	228 lbs.	3/16"	32" x 120"	1	321	5/16"	30" x 36"	1	304		
16 ga.	19" x 36"	1	316	9/16"	517 lbs.	3/16"	29" x 120"	1	321	5/16"	20" x 120"	1	304		
16 ga.	21" x 114"	1	316	1 1/16"	231 lbs.	3/16"	36" x 118"	1	321	5/16"	29" x 36"	1	304		
16 ga.	21" x 60"	1	316	1 1/8"	1,000 lbs.	3/16"	31" x 120"	3	321	5/16"	48" x 120"	3	316		
16 ga.	36" x 128"	1	316	3/4"	978 lbs.	3/16"	36" x 106"	1	321	5/16"	20" x 60"	1	347		
16 ga.	20" x 120"	1	316	13/16"	23 lbs.	3/16"	34" x 103"	1	321	3/8"	49" x 126"	1	347		
16 ga.	34" x 128"	2	316	15/16"	23 lbs.	3/16"	24" x 52"	1	304	3/8"	37" x 51"	1	347		
16 ga.	18" x 120"	2	316	7/8"	25 lbs.	3/16"	18" x 77"	1	304	3/8"	30" x 120"	1	321		
14 ga.	36" x 120"	2	316	1"	12,000 lbs.	3/16"	18" x 81"	1	304	3/8"	8" x 114"	1	304		
14 ga.	22" x 120"	10	316	1 1/8"	944 lbs.	3/16"	30" x 109"	1	304	3/8"	18" x 49"	1	304		
14 ga.	33" x 120"	2	316	1 1/4"	210 lbs.	3/16"	32" x 120"	1	304	3/8"	27" x 30"	1	304		
14 ga.	18" x 120"	2	316	1 3/16"	4,483 lbs.	3/16"	60" x 180"	2	304	3/8"	9 1/2" x 49"	1	304		
14 ga.	20" x 120"	6	316	1 5/16"	2,984 lbs.	3/16"	24" x 65"	1	304	3/8"	17" x 142"	1	321		
14 ga.	45" x 120"	1	316	1 3/8"	2,400 lbs.	3/16"	24" x 93"	1	321	3/8"	36" x 113"	1	321		
14 ga.	22" x 114"	1	316	1 1/2"	2,400 lbs.	3/16"	32" x 93"	1	321	3/8"	36" x 112"	1	321		
14 ga.	48" x 120"	1	316	1 5/16"	219 lbs.	3/16"	49" x 93"	1	347	3/8"	40 1/4" x 41 1/4"	1	321		
14 ga.	32" x 80"	1	316	3"		3/16"	18" x 47"	1	347	7/16"	37" x 37 1/2"	1	321		
12 ga.	40" x 110"	1	302			3/16"	22" x 97"	1	347	7/16"	9 1/2" x 49"	2	304		
12 ga.	40" x 90"	1	302			3/16"	23" x 60"	1	347	7/16"	29" x 32"	1	316		
12 ga.	36" x 126"	1	304	1/2"	500 lbs.	3/16"	15" x 56"	1	347	7/16"	33" x 42"	1	316		
12 ga.	28" x 120"	1	316	1 5/16"	1,000 lbs.	3/16"	44" x 45"	1	347	7/16"	25" x 60"	1	316		
12 ga.	36" x 102"	1	316	3"	200 lbs.	3/16"	25" x 89"	2	347	1/2"	48" x 120"	1	304		
12 ga.	40" x 136"	1	321	3 1/4"	620 lbs.	1/4"	48" x 132"	2	304	1/2"	48" x 95"	7	304		
11 ga.	24" x 114"	1	302			1/4"	30" x 76"	1	304	1/2"	10" x 35"	3	304		
11 ga.	48" x 120"	1	304			1/4"	60" x 117"	1	304	1/2"	48" x 120"	6	316		
11 ga.	52" x 124"	1	304	5/16"	600 lbs.	1/4"	36" x 120"	1	321	1/2"	33" x 46"	1	316		
11 ga.	49" x 110"	1	304			1/4"	31" x 100"	2	347	1/2"	32" x 140"	1	321		
11 ga.	48" x 148"	3	304			1/4"	13" x 80"	1	347	1/2"	20" x 42"	1	347		
11 ga.	49" x 150"	2	304			1/4"	13" x 110"	1	347	1/2"	36" x 112"	1	321		
11 ga.	36" x 72"	1	321			1/4"	12" x 120"	1	347	1/2"	23 1/2" x 25 1/2"	1	321		
11 ga.	20" x 96"	1	321			1/4"	13" x 53"	1	347	1/2"	26" x 26"	1	321		
11 ga.	20" x 120"	2	321			1/4"	13" x 79"	1	347	1/2"	22" x 25 1/2"	1	321		
11 ga.	28" x 90"	1	347			1/4"	13" x 114"	1	347	1/2"	21 1/2" x 25 1/2"	1	321		
10 ga.	36" x 96"	74	304	TYPE 347		1/4"	28" x 42"	1	347	1/2"	25" x 28"	1	321		
10 ga.	24" x 100"	1	304	3/4"	1,002 lbs.	1/4"	34" x 42"	1	347	9/16"	19" x 38"	1	304		
10 ga.	12" x 116"	2	304	1 3/16"	200 lbs.	1/4"	39" x 47"	1	347	9/16"	18" x 38"	1	304		
10 ga.	28" x 114"	1	304	1 1/2" 64"	1,210 lbs.	1/4"	96" x 243"	1	304	1/2"	25" x 47"	1	304		
10 ga.	27" x 114"	1	304			1/4"	36" x 104"	1	321	1/2"	28" x 44"	1	304		
10 ga.	20" x 132"	1	304	STAINLESS		1/4"	36" x 117"	2	321	1/2"	24" x 43"	1	304		
10 ga.	23" x 132"	1	304	HEXAGON BARS		1/4"	36" x 119"	1	321	1/2"	29" x 45"	1	304		
10 ga.	48" x 144"	1	304	TYPE 303		1/4"	36" x 89"	1	321	1/2"	26" x 26"	1	304		
10 ga.	27" x 108"	1	304	1/2"	437 lbs.	1/4"	27" x 120"	1	321	1/2"	24" x 46"	1	304		
10 ga.	27" x 106"	1	304	3/4"	228 lbs.	1/4"	36" x 112"	1	321	1/2"	30" x 43"	1	304		
10 ga.	24" x 115"	1	304			1/4"	36" x 81"	1	321	1/2"	39" x 45"	1	304		
10 ga.	28" x 114"	1	304			1/4"	34" x 132 1/2"	1	321	1/2"	18" x 55"	1	304		
10 ga.	24" x 120"	1	304	TYPE 347		1/4"	32" x 120"	1	321	1/2"	35" x 65"	1	316		
10 ga.	32" x 138"	1	347	1/2"	536 lbs.	1/4"	34" x 120"	3	321	1/2"	20" x 27"	2	316		
9 ga.	40" x 100"	1	304	3/4"	63 lbs.	1/4"	36" x 36"	1	321	3/4"	14 3/4" x 138"	10	304		
9 ga.	36" x 144"	1	304			1/4"	96" x 237"	1	304	3/4"	15" x 139"	2	304		
9 ga.	32" x 108"	1	304			1/4"	96" x 260"	1	304	3/4"	14 3/4" x 135"	1	304		
9 ga.	28" x 112"	1	304			1/4"	96" x 255"	1	304	3/4"	14 3/4" x 68"	1	304		
9 ga.	26" x 120"	2	304			1/4"	96" x 298"	1	304	3/4"	15" x 108"	4	304		
9 ga.	20" x 120"	5	347			1/4"	96" x 294"	1	304	3/4"	15" x 168"	3	304		
9 ga.	26" x 40"	1	347			1/4"	96" x 250"	1	304	1 1/8"	15" x 50"	1	316		
9 ga.	26" x 100"	1	347			1/4"	96" x 266"	1	304	1 1/4"	10" x 42"	3	316		
						1/4"	96" x 281"	1	304	1 1/4"	21" x 64"	2	304		
						1/4"	96" x 298"	1	304	1 1/4"	20" x 46"	1	316		
						1/4"	96" x 255"	1	304	1 7/16"	19" x 42"	1	304		
						1/4"	96" x 301"	1	304	1 1/2"	29" x 32"	1	304		
						1/4"	96" x 250"	1	304	1 1/2"	29" x 29"	1	304		

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CLEVELAND: Model AA-11, 1 3/8" serial #36586.

CLEVELAND: Model B, serial #42618/843, 1 1/16" capacity.

CONOMATIC: 4 Spindle, serial 2309FF, 1 1/2" capacity.

NEW BRITAIN GRIDLEY: 61, 6 Spindle, serial #25410, 1 1/8" capacity.

OTHER MODERN TOOLS IN STOCK

BORING MILLS: Bullard, Giddings & Lewis, New, 3" Capacity Horizontal

DRILLS & RADIALS: New Geared 24" Drills, 2" Capacity, New Radials 3 1/2" x 12" Column

ENGRAVERS: Auto, Deckel, Gorton, Taylor & Hobson

GEAR EQUIPMENT: Barber Colman, Fellows, National Broach, Red Ring

GRINDERS, CUTTER, SURFACE, ETC.: Abrasive, Blanchard, Brown & Sharpe, Bryant, Cincinnati, Heald, Landis, Norton, Oliver Read, Van Norman

LATHES: American, Henday, Harding, LeBlond, Monarch, Pratt & Whitney, New 16" to 28" G. H. Gap

MILLS, PLAIN & UNIV.: B. & S., Milwaukee, Van Norman, New Univ. & Vert.

PRESSES: Bliss 5-48, Hamilton 800 Ton, Toledo

SHAPERS: Cincinnati 20", Rockford 24"

TURRET LATHES: Bardons & Oliver, Gisholt Nos. 2L, 5, Jones & Lamson No. 5, Preselector Bar Feed, Libby, 5" Capacity, Warner & Swasey, 1, 2, 4 Preselector

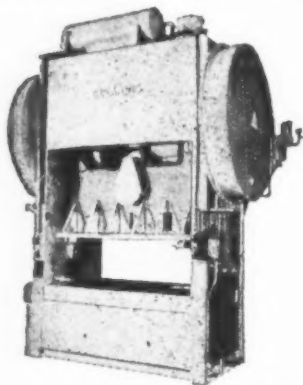
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 48"x48"x30' Cincinnati, 4 heads, m.d.
 54"x40"x14' Cincinnati, 4 heads, belted m.d.
 72"x72"x24' Betts, m.d.
 72"x72"x36' Niles, 4 heads, reversing m.d.
 84"x72"x30' Niles, reversing m.d.

SLOTTERS

10" Newton, m.d.
 10" Newton, cone
 12" Bement-Miles, m.d.
 15" Canada, m.d.

18" Dill, m.d.
 18" Niles-Bement, s.p.d.
 18" Betts Crank Slotter, m.d.
 20-24" Dill, m.d.
 22" Betts, m.d.
 48" Niles, m.d.

TURRET LATHES AND SCREW MACHINES

No. 601 Oster Geared Head Rapiduction, m.d. in leg, chucking
 No. 1 Cincinnati-Acme Semi-Universal, m.d.
 No. 1A Warner & Swasey, m.d.
 No. 1L Gisholt, m.d., Timken
 No. 2 Cincinnati-Acme Full Universal, m.d.
 No. 2 Pratt & Whitney Shavers, m.d.
 No. 2A Warner & Swasey, m.d., bar
 No. 2F Foster Fastermatic, m.d., Timken
 No. 3 Cincinnati-Acme Full Universal, m.d., chucking
 No. 3Foster Geared Head, m.d., bar
 No. 3 Foster Geared Head, m.d., bar
 No. 3F Foster Fastermatic, m.d., Timken
 No. 4 Warner & Swasey Plain, cone, bar and chucking types
 No. 4A Warner & Swasey Universal, m.d., chucking
 No. 4FU Foster Fastermatic, m.d., latest
 No. 5 Foster Universal, m.d., bar, late type
 No. 7 Bardons & Oliver, cone
 5/8" Pratt & Whitney Hand Screw Machine, cone
 2 1/2"x24", 3x36", 3 1/2"x32", 4x34" Jones & Lamson Geared Head, m.d., bar and chucking types
 3 1/4" Cincinnati-Acme Geared Head Flat Turret, chucking & bar types
 18" Libby, Type A, m.d., chucking
 20" Acme, s.p.d., bar
 20" Dreses
 28" Gisholt, cone

26" Libby Type C, m.d., chucking
 No. 5 Woods Tilted Turret, Model D, cone

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 No. 3 Nutter & Barnes Cold Saw
 No. 6 Cochran Bly Cold Saw
 No. 138 Espen Lucas Cold Saw, m.d.
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 24" Gemco, m.d., latest
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 24" Porter & Johnston, cone
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5/8"	Diameter	Weight 228 lbs.
9/16"	Diameter	Weight 317 lbs.
1 1/16"	Diameter	Weight 231 lbs.
3/4"	Diameter	Weight 1,000 lbs.
13/16"	Diameter	Weight 978 lbs.
15/16"	Diameter	Weight 23 lbs.
7/8"	Diameter	Weight 25 lbs.
1"	Diameter	Weight 12,000 lbs.
1 1/8"	Diameter	Weight 844 lbs.
1 3/16"	Diameter	Weight 210 lbs.
1 5/16"	Diameter	Weight 4,403 lbs.
1 3/8"	Diameter	Weight 2,984 lbs.
1 3/4"	Diameter	Weight 2,157 lbs.
1 15/16"	Diameter	Weight 2,400 lbs.
2"	Diameter	Weight 219 lbs.

TYPE 304		
1/2"	Diameter	Weight 500 lbs.
5/16"	Diameter	Weight 620 lbs.
3"	Diameter	Weight 200 lbs.
1 1/4"	Diameter	Weight 620 lbs.

TYPE 308		
5/16"	Diameter	Weight 900 lbs.

TYPE 321		
1"	Diameter	Weight 10,000 lbs.

TYPE 347		
3/4"	Diameter	Weight 1,002 lbs.
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- 1—Northwest 25 Shovel Attachment
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Qs	HP	Make	Type	RPM
1	285/300	G. E.	MDP-420	350/410
(Spare armature & anti-friction bearings for above motor)				
1	150/100	Whse.	MCB-100	370/300
1	150	Whse.	MT-5	350
1	100/140	Whse.	MCB-90	500/415
4*	100/140	G. E.	MDA-108	430/500
3	100/130	G. E.	CO-1831	675/400
3	85/85	Whse.	K-10	685/700
1	75/40	Whse.	K-10	485/470
1*	75/100	Whse.	CK-10	500/675
5	70/80	Whse.	MCA-76	440/440
3	70/90	Whse.	MCB-70	440/400
1	50/90	C. W.	FW	575/450
1	50	G. E.	CO-1829	750
1	50/65	Whse.	MCLA-121	500/450
3	50/65	Whse.	MCA-60	475/425
1	50	G. E.	CO-1810	725
1	45/85	G. E.	CO-1830	700/450
1	45/85	G. E.	CO-1811	600/500
4	45/57	Whse.	K-9	515/470
1	45/57	Whse.	KG-9	515/470
3	35/45	G. E.	CO-1810	500/450
1*	35	G. E.	MDA-104%	450
1	30	C. W.	EH	750
1	25/25	G. E.	CO-1829	750/450
1	27 1/2	Whse.	K-6	1070
3	25/38	G. E.	MDR-408	875/504
3	25/30	G. E.	MDP-408	600/415
3*	30/20	Whse.	MCA-49	600/470
3	19/19	Whse.	K-5	630/580

Qs	HP	Make	Type	RPM
3	18/19	C. W.	BW	620/560
1	16/12	G. E.	MDR-408	815/700
1	15	G. E.	CO-2505	700
1	15/10	G. E.	CO-1807	800/525
1*	13/17	G. E.	MDA-108	845/725
1*	13/17	G. E.	MDR-103	845/725

All motors series wound except those marked (*).
which are compound; can furnish these for series operation.

SYNCHRONOUS MOTORS

Qs	HP	Make	P. F.	Volts	RPM
1	6000	G. E.	100	2300	90
1	4350	C. W.	100	13,200/6000	514
1	3000	Whse.	80	4800/2400	730
2	2100	G. E.	100	2300	350
3	1750	G. E.	100	2200	350
1	1000	El. Mch.	100	440	1200
1	750	G. E.	80	2300	450
1	700	G. E.	80	2300	720
1	250	G. E.	100	2300	514

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1**	1200	G. E.	MT-26	2200	377
2**	1000	Al. Ch.	ANY	2200	230
1	800	G. E.	MT	2200	440
1**	600	G. E.	MT-20	2200	300
2	500	G. E.	1-16-M	2200	450
1**	400	Al. Ch.	ANY	2200	914
2	400	G. E.	MT-413	2200	450
1	250	Whse.	CW-937	440	1300

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Qs	KW	Make	RPM	Volts DC	Volts AC
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2	1000	Whse.	514	600	11000/6000
4	1000	G. E.	514	600	11000/6000
1	1000	G. E.	514	600	2300
1	500	C. W.	720	275	2300/440
1 (3-U)	500	Whse.	1200	250	440
3	500	C. W.	720	575	2300/440
2	250	Whse.	1200	125/350	2300
1	200	Ridgway	900	275	2300
1	155	G. E.	720	250	2300/440
2	150	Whse.	1200	250	2300

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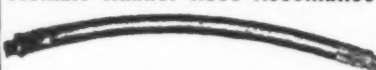
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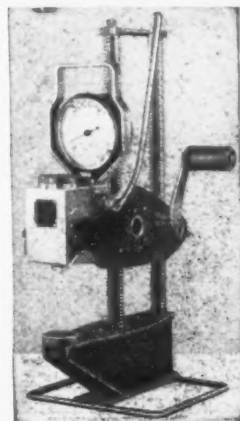
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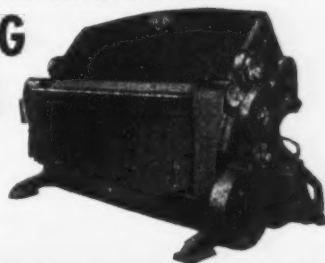
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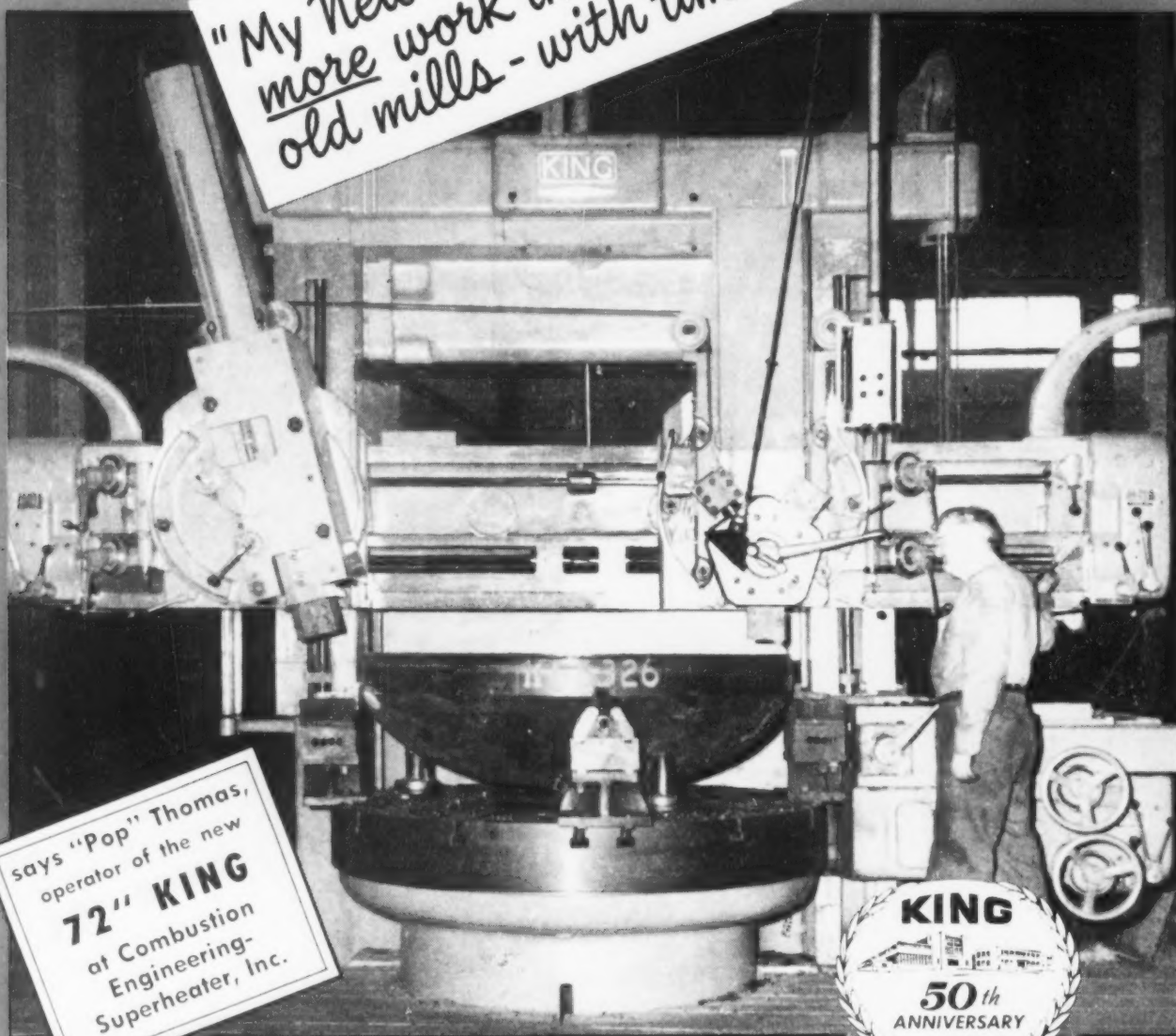


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